This permit is being processed as a Major Industrial permit. The discharge results from the operation of a nuclear power plant, generating electrical power from the fission of nuclear material. The effluent limitations and special conditions contained in this permit will maintain the Water Quality Standards of 9 VAC 25-260-00 et seq.

1. Facility Name and Address: Dominion – North Anna Power Station, 5000 Dominion Boulevard, Glen Allen, VA 23060 — SIC Code: 4911

   Facility Location: 1022 Haley Drive (near Mineral, VA) — County: Louisa

2. Permit No.: VA0052451 — Expiration Date: January 11, 2006

3. Owner Name: Virginia Electric & Power Company

   Contact/Title: Pamela F. Faggert , Vice President and Chief Environmental Officer

   Telephone Number: (804) 273-3467

4. Application Complete Date: July 5, 2005

Permit Drafted By:	Christine Joyce	Date Drafted:	12/22/05
Permit Drafted By:	Susan Mackert	Date Drafted:	3/13/07
Draft Permit Reviewed By:	Thomas A. Faha	Date Reviewed:	01/20/06
Draft Permit Reviewed By:	Thomas A. Faha	Date Reviewed:	3/27/07
Public Comment Period :	Start Date: June 15, 2007	End Date:	August 2, 2007

5. Receiving Waters Information:

Receiving Stream Name :	Lake Anna	River Mile:	44.58
Stream Basin:	York	Subbasin:	N/A
Section:	03	Stream Class:	III
Special Standards:	None	Waterbody	F07

The discharge is to Lake Anna. There are no critical design flows for lakes.

7Q10 Low Flow:	N/A	30Q5	N/A
1Q10 Low Flow:	N/A	30Q10	N/A
Harmonic Mean Flow:	N/A		

303(d) Listed:	Yes (see Part 15)	TMDL Approved:	No	Date TMDL Approved:	Scheduled for 2014

6. Statutory or Regulatory Basis for Special Conditions and Effluent Limitations:

- ✓ State Water Control Law
- ✓ Clean Water Act
- ✓ VPDES Permit Regulation
- ✓ EPA NPDES Regulation
- ✓ EPA Guidelines
- ✓ Water Quality Standards
- ✓ Other (Best Professional Judgment)

7. Licensed Operator Requirements: IV (Outfall 111 only)

8. Reliability Class: Class II (Outfall 111 only)

9. Permit Characterization:

✓ Private	✓ Effluent Limited	– Possible Interstate Effect
– Federal	✓ Water Quality Limited	– Compliance Schedule Required
– State	✓ Toxics Monitoring Program Required	– Interim Limits in Permit
– POTW	– Pretreatment Program Required	– Interim Limits in Other Document

10. Wastewater Sources and Treatment Description:

This facility is a two unit nuclear power generation station operated by Dominion Virginia Power. It is the largest nuclear station in Virginia and can generate almost 2 million kilowatts of electricity per day to power 450,000 homes. Discharges are subject to 40CFR 423 of the Federal Effluent Guidelines.

There are 12 discharge points directly to Lake Anna; 5 are solely storm water. There are 13 internal discharge points that discharge to the Waste Heat Treatment Facility (WHTF) and then to Lake Anna through Outfall 001.

Table 1 details the discharge sources and treatment for each outfall with an average discharge flow of 2100 MGD (March 2001 – December 2006). Attachment 10 gives a complete summary for each discharge and outfall.

For outfalls with storm water drainage areas, typical rainfall events and discharges have been calculated as follows where:

Volume = (Area of Impervious Surface) (Rainfall) (27,154 gallons/acre-in)

Date of Storm Event	Outfall Number	Area of Impervious Surface (acres)	Total Rainfall (in)	Volume Discharged (gallons)
October 4, 1999	022	7.1	0.26	50,127
November 2, 1999	023	0.09	0.91	2,224
November 2, 1999	024	0.08	0.91	1,977
October 4, 1999	025	4	0.26	28,241
November 2, 1999	026	none	0.91	0
Theoretical Rainfall for year	Total	11.27	40 annual total	12,241,023

See **Attachment 1** for the NPDES Permit Rating Worksheet.

See **Attachment 2** for a facility schematic/diagram with outfalls.

TABLE 1 – Outfall Description (See **Attachment 10** for detail)

Outfall #	Discharge Source	Flow	Outfall Latitude and Longitude
001	**Discharge from WHTF at Dike 3** This outfall primarily discharges condenser cooling water from the Waste Heat Treatment Facility (WHTF) to Lake Anna at Dike 3. The water is non-contact, once through cooling water withdrawn from Lake Anna.	Volume is reported with Outfall 101.	**38° 03′ 47″ N** **77° 47′ 56″ W**
009	**Ground Water, Storm Water, and Backwash from Sand Filters and Reverse Osmosis Units** This intermittent discharge is mostly storm water runoff. In addition, it includes: -backwash cleaning from sand filters and reverse osmosis units (essentially ultra purified lake water) -groundwater -bearing cooling tower water during maintenance The outfall discharges effluent to the lake from a settling pond.	0.168 MGD (Long Term Average) 0.252 MGD (Maximum Daily) Pumping rate of settling pond is dependent on rainfall. Can go for weeks without pumping, and sometimes pumps for weeks.	**38° 03′ 47″ N** **77° 47′ 56″ W**
013	**Turbine Building Sump #1 & #2 and Storm water** This intermittent outfall periodically releases storm water runoff and turbine building sump water, which are used only for emergency releases. The storm water component is from an area with no industrial activity and no chemical additions.	0.0 MGD Emergency only. Normal pathway is through oil /water separator. Days per week and months per year vary. This outfall has discharged once in the past 10 years.	**38° 03′ 47″ N** **77° 47′ 56″ W**

014	**Drainage Area #31 (Storm Water Only)** This outfall has storm water draining from the back half of outside of turbine building. No industrial influence occurs.	Rainfall dependent.	**38° 03′ 47″ N** **77° 47′ 56″ W**
016	**Intake Screen Wash Water** This outfall is a low volume, non-process discharge that consists entirely of lake water. The water is used to wash the traveling screens. Screens are washed based on pressure (ΔP) across the screen. When debris builds up, screens rotate and are washed with lake water. The basket at the end of the trough collects the debris and the water is returned to the lake.	0.156 MGD (Average for 2002-2006)	**38° 03′ 47″ N** **77° 47′ 56″ W**
020	**Reverse Osmosis Reject** This outfall is designed to discharge continuously, but there are times when it does not discharge (rare, normally during outages when no make-up water is needed and all tanks are full). It consists of lake water after the reverse osmosis process.	0.37 MGD (Average for 2002-2006) Discharges into the incoming cooling water flow just outside the intake structure.	**38° 03′ 47″ N** **77° 47′ 56″ W**
021	**Reverse Osmosis Drain Line** This outfall is designed to discharge pure lake water from the reverse osmosis system.	0.0 MGD Outfall 021 has not been used since installation, and is in the permit for emergency use only. It would be used if both nuclear units went offline unexpectedly during freezing weather conditions i.e. in the case where the whole ionic system is down and the line needs to be drained.	**38° 03′ 47″ N** **77° 47′ 56″ W**
022	**Drainage Area #2A (Storm Water Only)** This is an area of approximately 52 acres, with approximately 7.1 acres of impervious area. The storm water is from an area with no industrial activity and no chemical additions.	Rainfall dependent.	**38° 03′ 55″ N** **77° 47′ 55″ W**
023	**Drainage Area #2B (Storm Water Only)** This is a small area of approximately 6 acres. The only impervious area is the 0.09 acre storage building which is used for hazardous waste accumulation and other miscellaneous storage. The storm water is from an area with no industrial activity and no chemical additions.	Rainfall dependent.	**38° 03′ 53″ N** **77° 47′ 58″ W**
024	**Drainage Area #3 (Storm Water Only)** A small drainage area of 9 acres with primarily sheet flow runoff of storm water to Lake Anna. About 0.08 acre is paved and impervious. The storm water is from an area with no industrial activity and no chemical additions.	Rainfall dependent.	**38° 03′ 58″ N** **77° 47′ 44″ W**
025	**Drainage Area #18 (Storm Water Only)** This 56 acre drainage area, with 4 acres of impervious area, includes a portion of the warehouse facilities, an outdoor laydown area and some small utility buildings. Outfall 025 discharges storm water from this drainage area into the WHTF. The storm water is from an area with no industrial activity and no chemical additions.	Rainfall dependent.	**38° 03′ 08″ N** **77° 47′ 25″ W**
026	**Drainage Area #25 (Storm Water Only)** This 61 acre drainage area has no impervious surface area. The storm water is from an area with no industrial activity and no chemical additions.	Rainfall dependent.	**38° 03′ 50″ N** **77° 48′ 05″ W**
101	**Cooling Water (Internal Outfall)** This outfall continuously discharges condenser cooling water to the discharge canal to the WHTF.	2100 MGD (Average for 2002-2006) 2708 MGD (Max) 785 MGD (Min) Discharge is based on volume taken in at intake for once through cooling, circulating water.	
103	**Process Waste Clarifier** This intermittent discharge includes: -lower volumes of steam generator blowdown -package boiler blowdown (not currently in use) -mat sump system discharge -ion exchanger waste -intermittent blowdown of the service water reservoir.	0.359 MGD (when running) Runs approx. 50% of the time.	**38° 03′ 47″ N** **77° 47′ 56″ W**
104	**Turbine Sumps 1, 2 and 3 & Storm Water** This outfall releases storm water runoff, turbine building sump water via low volume sump pumps (primary release path), turbine building sump 3 water via high volume sump pumps, drainage from the main and emergency condensate tanks, and fire water system flushing and uncontaminated storm water from containment for above ground fuel oil tank (1-FO-TK-1) to the WHTF via the discharge canal.	0.271 MGD – 0.432 MGD	**38° 03′ 47″ N** **77° 47′ 56″ W**

105	**Bearing Cooling Tower Blowdown** This outfall is used to control the water chemistry in the system intermittently when either of the units is operating. The discharge includes: -bearing cooling tower blowdown -lake to lake operation for BCS -strainer blowdown/maintenance	0.070MGD (Long Term Average) 17.3 MGD (Maximum Daily)	**38° 03′ 47″ N** **77° 47′ 56″ W**
107	**Bearing Cooling System Discharge – Lake to Lake Operation** This outfall is not currently in use. If a discharge were to occur, it would be temporary when the bearing cooling tower is valved off for maintenance work This is likely to occur within the next five years. Lake water would pass through the bearing cooling system, bypass the cooling tower and go straight to the WHTF. No treatment chemicals are used.	2.5 MGD (Long Term Average) 18.0 MGD (Maximum Daily) Emergency use only for tower maintenance. Expected use is once per year with untreated lake water	**38° 03′ 47″ N** **77° 47′ 56″ W**
108	**Service Water Overflow** This outfall is manually operated with a valve, and is used intermittently to control the level of the Service Water Reservoir as necessary. Discharge includes: -service water overboard overflow -batch blowdown -straight-through cooling water -header maintenance	0.537 MGD (Long Term Average) 14.1 MGD (Maximum Daily)	**38° 03′ 47″ N** **77° 47′ 56″ W**
109	**Hot Well Drain Unit 1** This intermittent outfall consists of relatively high-purity condensate water, with small concentrations of corrosion chemicals. The drains are normally used once per 18 months, on alternating schedules, during maintenance shutdowns of the respective units.	0.121 MGD (Long Term Average) 0.25 MGD (Maximum Daily)	**38° 03′ 47″ N** **77° 47′ 56″ W**
110	**Hot Well Drain Unit 2** Outfall 110 is substantially identical to Outfall 109.	0.121 MGD (Long Term Average) 0.25 MGD (Maximum Daily)	**38° 03′ 47″ N** **77° 47′ 56″ W**
111	**Main Sewage Treatment Plant** All domestic sewage is routed to the main sewage treatment plant. The plant is equipped with flow equalization basins, each with a capacity of 18,700 gals. During normal operation, only one side is used but during periods of high demand (outages) both sides are used.	0.03 MGD (Design Flow) Normally discharge is 0.004-0.01 MGD. It can increase to 0.025 MGD during refueling outages, once or twice per year.	**38° 03′ 47″ N** **77° 47′ 56″ W**
112	**Steam Generator Blowdown Unit 1** This outfall continuously discharges relatively high-purity condensate water from a closed system with small concentrations of corrosion chemicals while the unit is operating. Discharge is shut off once every 18 months for one month for maintenance.	0.192 MGD (Average for 2002-2006)	**38° 03′ 47″ N** **77° 47′ 56″ W**
113	**Steam Generator Blowdown Unit 2** Outfall 113 is substantially identical to Outfall 112.	0.163MGD	**38° 03′ 47″ N** **77° 47′ 56″ W**
114	**Service Water Pipe Vault Drain** This outfall is used when leakage accumulates in the Pipe Vault adjacent to the Service Water Reservoir. There is a manually operated sump pump inside the vault.	0.0 MGD Discharge usually consists of rainwater as service water. Discharge has not occurred in the past 20 years.	**38° 03′ 47″ N** **77° 47′ 56″ W**
115	**Service Water System Blowdown** This outfall is for emergency use only, to blowdown the service water reservoir when other pathways are not available for whatever reasons.	0.0 MGD Use has not occurred in the past 20 years.	**38° 03′ 47″ N** **77° 47′ 56″ W**
See **Attachment 3** for (Lake Anna East, DEQ #170C) topoquad map.			

11. Sludge Treatment and Disposal Methods:

Sludge from the sewage treatment plant (STP) is pumped to a tank truck operated by a properly approved and licensed contractor. It is transported directly to a septage receiving facility, at the Louisa County Water Authority STP in Louisa, VA, capable of and permitted for adequate treatment of the liquid sludge.

Prior to the disposal of liquid sludge from the sewage treatment plant, the sludge is analyzed for radioactivity. Should liquid sludge containing radioactive material be detected, it will be wasted to drying beds. Handling and disposal of any liquid sludge containing radioactive material is under the regulatory control of the Nuclear Regulatory Commission. Disposal is at an out of state, licensed radioactive waste disposal facility, Duratek Inc.

located in Oak Ridge, Tennessee.

The sludge application that accompanied the permit application constitutes an approvable sludge management plan for the facility. The permit contains a condition requiring the permittee to conduct all sewage sludge use or disposal activities in accordance with the sludge management plan and to submit to the Virginia Department of Health (VDH) and DEQ any changes to the sludge management plan for approval before implementation.

12. Discharges, Intakes, Monitoring Stations, Other Items in Vicinity of Discharge:

Table 2 lists discharges and monitoring stations (from both DEQ and LACA) below the Route 208 bridge. See **Attachment 6** for maps showing monitoring station locations and data collected.

TABLE 2 (Down-lake of Route 208 Bridge)		
VA0072079		Discharge point for the Lake Anna Environmental Services, Inc. (LAES) STP, formerly Lake Anna Family Campground STP, is on the lake approximately 4 miles north of the power plant.
Station #	**DEQ Station ID**	**Monitoring Station Description**
6	8NAR-6-LACA	LACA Water Quality Monitoring station on Lake Anna north of Rt. 208 Bridge BLOUNTWTF
6	8-NAR047.69	DEQ Water Quality Monitoring station at BLOUNTWTF
33	8CON-33-LACA	LACA Water Quality Monitoring station on Contrary Creek upstream
34	8FRC-34-LACA	LACA Water Quality Monitoring station on Freshwater Creek, upstream tributary of Contrary Creek
5	8CON-5-LACA	LACA Water Quality Monitoring station on Contrary Creek arm of Lake Anna
5	8-CON002.32	DEQ Water Quality Monitoring station at Contrary Creek arm of Lake Anna
4	8NAR-4-LACA	LACA Water Quality Monitoring station on Main Lake Anna North of Power Plant BOGGSPT
4	8-NAR044.68	DEQ Water Quality Monitoring station on Main Lake Anna North of Power Plant BOGGSPT
3	8NAR-3-LACA	LACA Water Quality Monitoring station on Main Lake Anna near Smith's Point
3	8-NAR043.00	DEQ Water Quality Monitoring station on Main Lake Anna near Smith's Point
13A	8NAR-13A-LACA	LACA Water Quality Monitoring station on Main Lake Anna
2	8NAR-2-LACA	LACA Water Quality Monitoring station on Main Lake Anna near River Bend Island RVRBND
2	8-NAR037.22	DEQ Water Quality Monitoring station on Main Lake Anna near River Bend Island
32	8ELK-32-LACA	LACA Water Quality Monitoring station on Elk Creek
31	8MLN-31-LACA	LACA Water Quality Monitoring station on Mill Pond
30	8RCK-30-LACA	LACA Water Quality Monitoring station on Rock Creek
1	8NAR-1-LACA	LACA Water Quality Monitoring station on Main Lake Anna - 100 yards from dam
1	8-NAR034.92	DEQ Water Quality Monitoring station on Main Lake near dam

13. Material Storage: Radioactive materials are regulated by the Nuclear Regulatory Commission. Others materials are listed in **Attachment 4** and will be covered in the O&M Manual, required by this permit. The materials are to be stored so as not to contaminate storm water.

14. Site Inspection: Performed by Christine Joyce and Tom Faha on October 14, 2005 (see **Attachment 5**).

15. Receiving Stream Water Quality and Water Quality Standards:

a) Ambient Water Quality Data

Monitoring data is available for the receiving stream, Lake Anna. The 2006 Virginia Water Quality Assessment 305(b)/303(d) Integrated Report (IR) gives an impaired classification for the assessment unit segment, VAN-F07L_NAR01A02, for PCBs in fish tissue. The affected area of this impairment, which is based on a VDH fish consumption advisory, includes the entirety of Lake Anna, including its tributaries Terry's Run, Gold Mine Creek and Contrary Creek. The segment, VAN-F07L_NAR01A02, also has an observed effect for mercury in fish tissue.

The 2006 Virginia Water Quality Assessment 305(b)/303(d) Integrated Report (IR) gives an impaired classification for the following eleven segments. These impairments are described below.

- VAN-F07L_CON01A02

This segment includes the Contrary Creek arm of Lake Anna, beginning at the start of the inundated waters of Contrary Creek. The Freshwater Creek arms are not included in this segment.

The fish consumption use is categorized as impaired due to a Virginia Department of Health, Division of Health Hazards Control, PCB fish consumption advisory.

The recreation and wildlife uses are considered fully supporting.

- VAN-F07L_FRC01A04

This segment includes the Freshwater Creek arm of Lake Anna.

The fish consumption use is categorized as impaired due to a Virginia Department of Health, Division of Health Hazards Control, PCB fish consumption advisory.

The aquatic life and recreation uses are considered fully supporting.

The wildlife use was not assessed.

- VAN-F07L_GMC01A02

This segment includes the Gold Mine Creek arm of Lake Anna.

The fish consumption use is categorized as impaired due to a Virginia Department of Health, Division of Health Hazards Control, PCB fish consumption advisory.

The aquatic life use is considered fully supporting.

The recreation and wildlife uses are considered fully supporting.

There were no exceedances of the freshwater consensus-based sediment screening values (SV) in this segment.

- VAN-F07L_NAR01A02

This segment includes the lower portion of Lake Anna, beginning near the northern end of the Route 690 bridge and continues downstream until the dam.

The fish consumption use is categorized as impaired due to a Virginia Department of Health, Division of Health Hazards Control, PCB fish consumption advisory.

The aquatic life, recreation, and wildlife uses are considered fully supporting.

There were no exceedances of the freshwater consensus-based sediment screening values (SV) in this segment.

- VAN07-F07L_NAR02A02

This segment includes the middle portion of Lake Anna, beginning at the Route 208 bridge and continues downstream until the northern end of the Route 690 bridge.

The fish consumption use is categorized as impaired due to a Virginia Department of Health, Division of Health Hazards Control, PCB fish consumption advisory.

The aquatic life, recreation, and wildlife uses are considered fully supporting.

There were no exceedances of the freshwater consensus-based sediment screening values (SV) in this segment.

- VAN-F07L_NAR03A02

This segment includes the upper portion North Anna River portion of Lake Anna, beginning at the boundary of F07 and continues downstream until the Route 208 bridge.

The fish consumption use is categorized as impaired due to a Virginia Department of Health, Division of Health Hazards Control, PCB fish consumption advisory.

The aquatic life, recreation, and wildlife uses are considered fully supporting.

There were no exceedances of the freshwater consensus-based sediment screening values (SV) in this segment.

- VAN-F07L_NAR04A06

This segment includes the upper portion North Anna River of Lake Anna beginning at the start of the inundated waters of the North Anna River downstream until the boundary of the F06 watershed.

The fish consumption use is categorized as impaired due to a Virginia Department of Health, Division of Health Hazards Control, PCB fish consumption advisory.

The aquatic life use is considered fully supporting.

The recreation and wildlife uses are considered fully supporting.

There were no exceedances of the freshwater consensus-based sediment screening values (SV) in this segment.

- VAN-F07L_PLT01A04

This segment includes the Plentiful Creek arm of Lake Anna.

The fish consumption use is categorized as impaired due to a Virginia Department of Health, Division of Health Hazards Control, PCB fish consumption advisory.

The aquatic life, recreation, and wildlife uses are considered fully supporting.

There were no exceedances of the freshwater consensus-based sediment screening values (SV) in this segment.

- VAN-F07L_PMC01A04

This segment includes the Pamunkey Creek arm of Lake Anna beginning at the confluence with the Terry's Run arm of the lake and continuing downstream until the confluence with the North Anna River at The Splits.

The fish consumption use is categorized as impaired due to a Virginia Department of Health, Division of Health Hazards Control, PCB fish consumption advisory.

The recreation use is considered fully supporting.

The aquatic life and wildlife uses are considered fully supporting.

There were no exceedances of the freshwater consensus-based sediment screening values (SV) in this

segment.

- VAN-F07L_PMC02A02

This segment includes the Pamunkey Creek arm of Lake Anna from the beginning of the inundated waters of Pamunkey Creek downstream to the confluence with Terry's Run arm of the lake.

The fish consumption use is categorized as impaired due to a Virginia Department of Health, Division of Health Hazards Control, PCB fish consumption advisory.

The aquatic life use is considered fully supporting.

The recreation and wildlife uses are considered fully supporting.

There were no exceedances of the freshwater consensus-based sediment screening values (SV) in this segment.

- VAN-F07L_TRY01A04

This segment includes the Terry's Run arm of Lake Anna.

The fish consumption use is categorized as impaired due to a Virginia Department of Health, Division of Health Hazards Control, PCB fish consumption advisory.

The aquatic life use is considered fully supporting.

The recreation and wildlife uses are considered fully supporting.

There were no exceedances of the freshwater consensus-based sediment screening values (SV) in this segment.

A Total Maximum Daily Load (TMDL) has not yet been written or approved for Lake Anna. However, the following TMDL schedule has been established per the 2006 Virginia Water Quality Assessment 305(b)/303(d) Integrated Report:

- PCBs (in fish tissue) – 2014

Please reference the 2006 Virginia Water Quality Assessment 305(b)/303(d) Integrated Report (IR) found in the permit file for a complete discussion on the impaired classification for the aforementioned eleven segments. The complete 2006 Virginia Water Quality Assessment 305(b)/303(d) IR can be found at http://www.deq.virginia.gov/wqa/ir2006.html.

b) Receiving Stream Water Quality Standards and Criteria

Lake Anna is unusual as it was constructed for the primary purpose of providing cooling water to an electrical power generating station. In addition to cooling water, Lake Anna also provides the recreational uses, aquatic life uses, and all other uses defined in 9 VAC25-260-10.A. Lake Anna is one of Virginia's prominent sport fisheries.

Adjacent to Lake Anna is the 3,400 acre Waste Heat Treatment Facility (WHTF) which was designed in 1968 and constructed in 1971. It has been used to cool the heated water from the power plant prior to its return to Lake Anna. The WHTF is commonly referred to as Lake Anna but from a regulatory role, it is classified as a waste treatment facility and not a surface water. The State Corporation Commission (SCC) in authorizing the impoundment of the North Anna River specifically acknowledged the creation and distinction between the 9,600 acre lake and the 3,400 acre cooling lagoons. In accordance with the definition of Surface Waters in 9 VAC25-31-10, the lagoons are considered waste treatment facilities and not surface waters. By letter dated November 30, 2006, the Attorney General of Virginia concluded that

the state cannot place temperature restrictions on the WHTF (see Attachment 7). See Part 26 of this fact sheet for further comment.

Part IX of 9 VAC 25-260(360-550) designates classes and special standards applicable to defined Virginia river basins and sections. The receiving water, Lake Anna, is located within Section 3 of the York River Basin and is classified as a Class III water.

At all times, Class III waters must achieve a dissolved oxygen (D.O.) of 4.0 mg/L or greater, a daily average D.O. of 5.0 mg/L or greater, a temperature that does not exceed 32°C and maintain a pH of 6.0-9.0 standard units (S.U.).

Attachment 8 details other water quality criteria applicable to the receiving stream.

Ammonia:
The fresh water, aquatic life Water Quality Criteria for Ammonia are dependent on the instream temperature and pH. The 90th percentile temperature and pH values are used because they best represent the critical design conditions of the receiving stream. The 90^{th} percentile temperature and pH from the 2002-2005 ambient data using DEQ Water Quality Monitoring Station (8-NAR037.22) are 31^{o}C and 7.7 S.U. respectively. These values are used to calculate the ammonia water quality criteria. The ammonia water quality criteria calculations are shown in Attachment 8.

Metals Criteria:
There are no hardness data for this facility. Staff guidance suggests using a hardness value of 25 mg/l $CaCO_3$. This is the same value used in the previous permit and it is a conservative value. The hardness-dependent metals criteria in Attachment 8 are based on this in-stream value.

c) Receiving Stream Special Standards

The State Water Control Board's Water Quality Standards, River Basin Section Tables (9 VAC 25-260-360, 370 and 380 designates the river basins, sections, classes, and special standards for surface waters of the Commonwealth of Virginia. The receiving water, Lake Anna, is located within Section 3 of the York River Basin. There are no special standards for Lake Anna.

d) Threatened or Endangered Species

The Virginia DGIF Fish and Wildlife Information System Database was searched for records to determine if there are threatened or endangered species in the vicinity of the discharge. No threatened or endangered species were identified as shown in Attachment 9.

16. Antidegradation (9 VAC 25-260-30):

All state surface waters are provided one of three levels of antidegradation protection. For Tier 1 or existing use protection, existing uses of the water body and the water quality to protect these uses must be maintained. Tier 2 water bodies have water quality that is better than the water quality standards. Significant lowering of the water quality of Tier 2 waters is not allowed without an evaluation of the economic and social impacts. Tier 3 water bodies are exceptional waters and are so designated by regulatory amendment. The antidegradation policy prohibits new or expanded discharges into exceptional waters.

The receiving stream has been classified as Tier 1 based on an antidegradation evaluation. Lake Anna meets the Water Quality Standards and the beneficial uses are protected. The waste load allocations will be calculated to maintain water quality standards and criteria.

17. Effluent Screening, Wasteload Allocation, and Effluent Limitation Development :

To determine water quality-based effluent limitations for a discharge, the suitability of data must first be determined. Data is suitable for analysis if one or more representative data points is equal to or above the quantification level ("QL") and the data represent the exact pollutant being evaluated.

Next, the appropriate Water Quality Standards (WQS) are determined for the pollutants in the effluent. Then, the Wasteload Allocations (WLA) are calculated. In this case since the critical flows 7Q10 and 1Q10 have been determined to be zero, the WLA's are equal to the WQS. The WLA values are then compared with available effluent data to determine the need for effluent limitations. Effluent limitations are needed if the 97th percentile of the daily effluent concentration values is greater than the acute wasteload allocation or if the 97th percentile of the four-day average effluent concentration values is greater than the chronic wasteload allocation. Effluent limitations are based on the most limiting WLA, the required sampling frequency, and statistical characteristics of the effluent data.

a) Effluent Screening:
All effluent limits were met from 2001 – 2006. Toxics monitoring performed in 2001 and 2003 showed no toxicity or levels with reasonable potential to cause a violation of a water quality criterion.
See Attachment 10 for details for each discharge and outfall.

b) Mixing Zones and Wasteload Allocations (WLAs):
Wasteload allocations (WLAs) are calculated for those parameters in the effluent with the reasonable potential to cause an exceedance of water quality criteria. The basic calculation for establishing a WLA is the steady state complete mix equation:

$$WLA = \frac{C_o [Q_e + (f) (Q_s)] - [(C_s) (f) (Q_s)]}{Q_e}$$

Where:
- WLA = Wasteload allocation
- C_o = In-stream water quality criteria
- Q_e = Design flow
- Q_s = Critical receiving stream flow (1Q10 for acute aquatic life criteria; 7Q10 for chronic aquatic life criteria; harmonic mean for carcinogen-human health criteria; and 30Q5 for non-carcinogen human health criteria)
- f = Decimal fraction of critical flow
- C_s = Mean background concentration of parameter in the receiving stream.

However, the water segment receiving the discharge from all outfalls is Lake Anna. It is DEQ practice not to assign any dilution to discharges to lakes without specific justification. As such, WLAs are set equal to the water quality criteria. However, Outfalls 009, 013, 016, 020, 021 are all close to the cooling water intake and the basic assumption is that the discharges have immense dilution because of the flow in that area.

c) Effluent Limitations/Monitoring Requirements

The effluent limitations are presented in tables found in Attachment 10.

The mass loading (kg/d) for monthly and weekly averages were calculated by multiplying the concentration values (mg/l), with the flow values (in MGD) and a conversion factor of 3.785.

Sample Type and Frequency are in accordance with the recommendations in the VPDES Permit Manual.

18. Antibacksliding:

All limits in this permit are at least as stringent as those previously establish. Backsliding does not apply to this reissuance.

19. Other Permit Requirements :

a) Part I.B. of the permit contains additional chlorine monitoring requirements for the STP (Outfall 111), quantification levels and compliance reporting instructions.

Minimum chlorine residual must be maintained at the exit of the chlorine contact tank to assure adequate disinfection. No more that 10% of the monthly test results for TRC at the exit of the chlorine contact tank shall be <1.0 mg/L with any TRC <0.6 mg/L considered a system failure. Monitoring at numerous STPs has concluded that a TRC residual of 1.0 mg/L is an adequate indicator of compliance with the *E. coli* criteria. *E. coli* limits are defined in this section as well as monitoring requirements to take effect should an alternate means of disinfection be used.

9 VAC 25-31-190.L.4.c. requires an arithmetic mean for measurement averaging and 9 VAC 25-31-220.D. requires limits be imposed where a discharge has a reasonable potential to cause or contribute to an in-stream excursion of water quality criteria. Specific analytical methodologies for toxics are listed in this permit section as well as quantification levels (QLs) necessary to demonstrate compliance with applicable permit limitations or for use in future evaluations to determine if the pollutant has reasonable potential to cause or contribute to a violation. Required averaging methodologies are also specified.

b) Permit Section Part I.C., details the requirements for Toxics Management Program.

The VPDES Permit Regulation 9 VAC 25-31-210 requires monitoring and 9 VAC 25-31-220.I requires limitations in the permit to provide for and assure compliance with all applicable requirements of the State Water Control Law and the Clean Water Act. Because of the large volume of discharge from Outfall 001 into Lake Anna and the potential for contamination within the WHTF, a TMP is warranted. Because of the volume and continuous nature of the discharge, chronic toxicity with two species shall be required. The frequency shall be once per year. Should the effluent be toxic, the permit may be reopened to include a WET limit or other requirements to address toxicity. Past tests have shown no toxicity.

c) Permit Section Part I.D details the requirement for Flow Releases and Lake Level Management.

Dominion Resources was granted a license from the State Corporation Commission (SCC) to construct the Lake Anna Dam in 1969 to impound the waters of the North Anna River. The primary purpose of the impounded waters is to serve as cooling water for the North Anna Power Station. The dam was completed in 1971 and filled in 1972. The impounded waters total approximately 13,000 acres at an elevation of 250' above sea level.

The impounded waters are divided in two sections by a series of three dikes. The first section is a 9,600 acre lake that is used for recreational purposes and as the source of cooling water for the North Anna Power Station. The second section is 3,400 acres that are used as cooling lagoons for the dissipation of heat before the water reenters the main body of the lake; this section is referred to as the Waste Heat Treatment Facility (WHTF). The 9,600 acre lake is considered state waters and subject to the Water Quality Standards (9 VAC25-260). The WHTF is considered a cooling lagoon and not subject to the standards (see Part 26 of the Fact Sheet).

With the issuance of the SCC license in 1969, Dominion was required to maintain a minimum instantaneous water release of 40cfs from the lake. On February 11, 1972, the State Water Control Board issued a 21b Certificate to Dominion requiring the same release rate. This same requirement was placed in a 401 Certificate issued to Dominion in 1973. The certificates were revoked in 2001 since the flow release requirements were placed in the reissued VPDES permit.

In 2000, the Virginia General Assembly amended the State Water Control Law to require the maintenance of the lake level so as to protect both upstream (lake) and downstream beneficial uses. The statute reads as follows:

§ 62.1-44.15:1.2. Lake level contingency plans.
Any Virginia Pollutant Discharge Elimination System permit issued for a surface water impoundment whose primary purpose is to provide cooling water to power generators shall include a lake level contingency plan to allow specific reductions in the flow required to be released when the water level above the dam drops below designated levels due to drought conditions. The plan shall take into account and minimize any adverse effects of any release reduction requirements on beneficial uses, as defined in § 62.1-10, within the impoundment, and on downstream users. The reduction in release amounts required by a lake level contingency plan shall not be implemented to the extent they result in an adverse impact to (i) the ability to meet water quality standards based upon permitted discharge amounts, (ii) the ability to provide adequate water supplies for consumptive purposes such as drinking water and fire protection, and (iii) fish and wildlife resources. In the event there is an imminent threat of such an adverse impact, the permit holder and the Department of Environmental Quality shall be notified. Upon such notification, the permit holder may increase release amounts as specified in the permit for up to forty-eight hours or until such time as the Department of Environmental Quality determines whether or not the increase in release amounts is necessary. This section shall not apply to any such facility that addresses releases and flow requirements during drought conditions in a Virginia Water Protection Permit.

During the last reissuance of this permit, a meeting was held with many of the stakeholders affected by the above requirement to discuss permit conditions. The following conditions were placed in the permit reissued in 2001:

1. Dominion shall at all times provide a minimum instantaneous release from the Lake Anna impoundment of 40cfs except as provided below.
2. When the level in Lake Anna reaches 248 feet above mean sea level (msl), Dominion will begin reducing releases below the 40cfs minimum in accordance with the following conditions:
   a. Minimum instantaneous releases shall not drop below 20cfs.
   b. Dominion will notify DEQ and the following downstream users at least 72 hours prior to the initiation of flow reductions:
      - Hanover County Public Utilities
      - Bear Island Paper Company
      - Engel Farms, Inc.
      - Pamunkey Indian Tribal Government
   c. Skimmer gate adjustments will be performed in accordance with Dominion's Station Operating Procedures.
   d. Releases shall be stepped down in increments of approximately 5cfs with at least a 72-hour period following each incremental reduction and prior to any subsequent reduction.
   e. During the period in which releases are reduced below 40cfs, conditions in the North Anna River shall be monitored in accordance with the monitoring plan submitted by the permittee and approved by the DEQ prior to implementation of the Lake Level Contingency Plan.
   f. Releases from the dam shall return to 40cfs upon the Lake level returning to greater than 248'msl. Increases of flow will occur in 5cfs increments with a 24 hour wait period prior to the next gate adjustment.
   g. If any downstream user identifies an adverse effect at any time during flow reductions and notifies the DEQ of the adverse effect, the Director shall make a timely investigation. If after notice to the permittee and the affected downstream users, the Director finds an adverse effect from the flow reductions, the flows shall be increased in 5cfs increments with a 24 hour wait period prior to the next gate adjustment, until the flow reaches 40cfs or the Director finds that the adverse effect has been eliminated.
   h. Adverse effect is defined as the inability to withdraw/discharge water for proper operation of facilities, or impairment of water quality.

The above conditions were implemented during the drought of 2001-2002. Dominion adjusted the gates from October 2001 to December 2002 to achieve the 20cfs release requirement. Hanover County monitored the water level at their drinking water intake daily to assure adequate stream levels and flows. No adverse affects were reported to DEQ per item (g) above.

The above conditions were based on professional judgment by DEQ with consultation from the various stakeholders and DGIF so as to balance the upstream and downstream beneficial uses. These flow conditions are to protect the narrative portion of the Water Quality Standards and therefore professional judgment must be used to determine appropriate permit conditions. The same conditions, with some edits, shall be used for this permit reissuance.

- 40cfs minimum instantaneous release:

  Statistical flows of the North Anna River near Doswell at gage 01671000, prior to the dam, for the period 1929 to 1971 are as follows:

  - 1Q10 5.6cfs
  - 7Q10 8.2cfs
  - 30Q10 14cfs
  - 30Q5 24cfs
  - Harmonic Mean 91cfs
  - Median (50%) 179cfs

  These flow statistics are similar to what were used in the initial selection of the 40cfs minimum release rate. Since the mid-1980s, Dominion has been conducting fish surveys of the North Anna River. While the purpose of the studies have been to assess possible temperature impacts due to the 316(a) temperature variance, and not what the fishery might have been absent the dam, the results also record the impacts due to the 40cfs release rate. The results of the surveys show a viable fishery.

  The 40cfs minimum flow release requirement has been in effect since the construction of the dam in 1971. The statistical flows of the river near Doswell at gage 01671020 for the period 1980-2003 are as follows:

  - 1Q10 40cfs
  - 7Q10 41cfs
  - 30Q10 44cfs
  - 30Q5 46cfs
  - Harmonic Mean 117cfs
  - Median (50%) 128cfs

  While the flow regime/frequencies of the North Anna River changed from pre and post construction of the dam, the median flow has decreased and the extreme low flows have been eliminated. The 34 year existence and operation of the dam has now become the normal or baseline condition for the North Anna River. The period of record is fairly long and the North Anna River is supporting a healthy aquatic community and no other flow restrictions/requirements such as minimum seasonal flows or return frequency of low flow events in addition to the 40cfs requirement is proposed with this reissuance. Staff recognizes that this condition would allow flows of 40cfs to occur when flows in the North Anna River could be expected to be much larger. However, flows from the lake are primarily a function of meteorological conditions rather than operational decisions by Dominion and staff does not see any need to place further requirements in the permit.

- 248'msl designated lake level:

  The selection of 248'msl as the trigger point for release rate reduction was based on historical lake levels and flows in the North Anna river and an attempt to balance the upstream and downstream uses of the water. As stated above, the construction of the dam altered the normal flow patterns of the river and percent of time flows in the river would be at 40cfs and below. A higher elevation would increase the percent of time the river experienced low flows and a commensurate impact on the aquatic community can be expected. A lower elevation would increase the percent of time recreational uses of the lake are reduced as well as Dominion's ability to operate the plant. Since 1978 the lake level has gone below 248ft msl three times, once in 1993 for one day, once in 1998 - 1999 for 7 weeks and once in 2001- 2002 for 60 weeks. No changes to this level are proposed with this reissuance.

- 20cfs release rate:

  The selection of 20cfs as the minimum release rate and the incremental reduction, were also based on historical drought flows and the need to protect downstream beneficial uses. The value is based on best professional judgment and is an attempt at balancing the protection of upstream and downstream beneficial uses. No change is proposed to the 20cfs minimum flow.

- Contacts:
  Contacts include those stakeholders who would be significantly affected by the release reduction. With this reissuance, the Virginia Department of Game and Inland Fisheries is being added to the contact list. DGIF is the state agency responsible for assessing the fishery of the North Anna River.

- Dam operation:
  Dominion is required to have a manual specifying how it operates releases from the dam. Dominion has an operating procedure for the lake spillway (0-OP-59.1). This procedure sets forth Dominion's operation of the two skimmer gates and three radial gates at the dam. In general, the gates are operated based on a lake level of 250'msl. The plan calls for adjustments to be made to flows as the lake level is at 250'msl and rising and at 249.9'msl and falling.

- Incremental flow changes:
  The use of 5cfs as the incremental flow change is a prudent means to proceed with a reduction so as to mitigate any immediate effects. The 5cfs value is as practical a figure as possible given the level of uncertainty associated with controlling actual release flows. The 72 hour period allows the reduced flows to reach the downstream users and time for assessments.

- Monitoring:
  Dominion is to conduct monitoring of the North Anna River during periods when the releases are <40cfs to assess affects on the aquatic community. The frequency and duration of low flows are likely to cause stress to aquatic community and the purpose of the monitoring is to assist in assessing the impact of the low flows per the statute. Dominion shall follow the monitoring plan submitted to DEQ on March 13, 2002. Modifications to this plan shall be approved by DEQ prior to implementation.

- Return to 40cfs:
  Releases are to return to 40cfs once the lake level is higher than 248'msl designated level.

- Adverse Effects:
  The release rate shall be increased should DEQ receive notification and confirm that there are, or imminent threat of, downstream impacts occurring as a result of the reduced release rates. The increases shall occur in 5cfs increments every 24 hours, to maximum of 40cfs, until DEQ confirms that the downstream impacts have been mitigated. This condition is in concert with the statute's requirement that the reduced releases do not cause downstream impairments. In determining adverse impacts, DEQ will give the highest priority to protecting Hanover County's drinking water intake on the North Anna River. DEQ shall consult with DGIF on impacts to the aquatic community to assure impacts do not become severe.

- Installation and operation of gage station
  The special condition shall include a new requirement, the installation of a gaging station in immediate proximity of the dam. The nearest gage is currently 20 miles downstream and a station closer to the dam is needed to provide more accurate measurements of releases from the dam. The placement of a gage here will provide a better tool by which to measure releases and will serve as a means to allow real time and better adjustments to the skimmer gates to achieve and assure the 40cfs, 20cfs and 5cfs requirements. The gage placement, construction and operation shall be of sufficient quality that the data is acceptable to be published by the US Geological Survey. The placement of the gage shall be no further downstream than the Rt. 658 bridge. The gage shall be installed and in operation by September 30, 2008.

d) Permit Section Part I.F. details the requirements of a Storm Water Management Plan.

9 VAC 25-31-10 defines discharges of storm water from facilities with industrial activity. 9 VAC 25-31-120 requires a permit for these discharges. The pollution prevention plan requirements are derived from the VPDES general permit for discharges of storm water associated with industrial activity, 9 VAC 25-151-10 et seq.

20. Other Special Conditions :

a) pH Monitoring for Internal Outfalls (Outfalls 103, 104, 105, 108, 109, 110, 112, and 113).
The internal outfalls 103, 104, 105, 108, 109, 110, 112, and 113 discharge into an internal discharge canal that then discharges into the waste heat treatment facility (3 lagoons) and then discharges to Lake Anna via Outfall 001. The huge quantity of water in the internal discharge canal (about 2000 MGD) provides a very significant assimilative ability for small discharges from these internal outfalls. Also, as per the memo from Fred Holt, OWRM, dated May 3, 1990 (Steam/Electric Permits), the technology limits for pH need only be met at the point of final discharge. Since pH for all these internal outfalls are based upon technology limit and the violation of water quality standard is not expected, the pH monitoring point for these internal outfalls is redefined to the cooling water discharge canal.

b) O&M Manual Requirement. Required by Code of Virginia §62.1-44.19; Sewage Collection and Treatment Regulations, 9 VAC 25-790; VPDES Permit Regulation, 9 VAC 25-31-190.E. By December 31, 2007, the permittee shall submit a statement confirming the accuracy and completeness of the current O&M Manual to the Department of Environmental Quality, Northern Virginia Regional Office (DEQ-NVRO). If the O&M Manual is no longer accurate and complete, a revised O&M Manual shall be submitted for approval to the DEQ Northern Regional Office by April 30, 2008. Future changes to the facility must be addressed by the submittal of a revised O&M Manual within 90 days of the changes. Non-compliance with the O&M Manual shall be deemed a violation of the permit.

c) Water Quality Criteria Monitoring (Outfall 001). State Water Control Law §62.1-44.21 authorizes the Board to request information needed to determine the discharge's impact on State waters. States are required to review data on discharges to identify actual or potential toxicity problems, or the attainment of water quality goals, according to 40 CFR Part 131, Water Quality Standards, subpart 131.11. To ensure that water quality criteria are maintained, the permittee is required to analyze the facility's effluent for the substances noted in Appendix B of this VPDES permit once per year.

d) Water Quality Criteria Reopener. The VPDES Permit Regulation at 9 VAC 25-31-220 D. requires establishment of effluent limitations to ensure attainment/maintenance of receiving stream water quality criteria. Should data collected and submitted for Attachment A of the permit and effluent monitoring indicate the need for limits to ensure protection of water quality criteria, the permit may be modified or alternately revoked and reissued to impose such water quality-based limitations.

e) Chlorine discharge from Cooling Tower (Outfall 105). Condition regarding discharge of chlorine from cooling tower blowdown per 40 CFR 423.13(c)(2) stating neither free available chlorine nor total residual chlorine may be discharged from any unit for more than two hours in any one day and not more than one unit in any plant may discharge free available or total residual chlorine at any one time unless the utility can demonstrate to the Regional Administrator or State, that the units in a particular location cannot operate at or below this level of chlorination.

f) Additional Instructions Regarding 126 Priority Pollutants (Outfall 105). Condition regarding monitoring requirement for 126 priority pollutants per 40 CFR 423.13(d)(2) stating at permitting authority's discretion, instead of the monitoring in 40 CFR 122.11(b), compliance with the limitations for the 126 priority pollutants in paragraph (d)(1) of the section may be determined by engineering calculations which demonstrate that the regulated pollutants are not detectable in the final discharge by the analytical methods in 40 CFR part 136.

g) 95% Capacity Reopener (Outfall 111). The VPDES Permit Regulation at 9 VAC 25-31-200.B.2. requires all POTWs and PVOTWs develop and submit a plan of action to DEQ when the monthly average influent flow to their sewage treatment plant reaches 95% or more of the design capacity authorized in the permit for each month of any three consecutive month period. This facility is a POTW.

h) Indirect Dischargers(Outfall 111). Required by VPDES Permit Regulation, 9 VAC 25-31-280 B.9 for POTWs and PVOTWs that receive waste from someone other than the owner of the treatment works.

i) Licensed Operator Requirement (Outfall 111). The Code of Virginia at §54.1-2300 et seq. and the VPDES Permit Regulation at 9 VAC 25-31-200 D, and Rules and Regulations for Waterworks and Wastewater Works Operators (18 VAC 160-20-10 et seq.) requires licensure of operators. This facility requires a Class IV operator.

j) Reliability Class (Outfall 111). The Sewage Collection and Treatment Regulation at 9 VAC 25-790 requires sewerage works achieve a certain level of reliability in order to protect water quality and public health consequences in the event of component or system failure. The facility is required to meet a reliability Class of II.

k) Sludge Use and Disposal (Outfall 111). The VPDES Permit Regulation at 9 VAC 25-31-100.P., 220.B.2., and 420-720, and 40 CFR Part 503 require all treatment works treating domestic sewage to submit information on their sludge use and disposal practices and to meet specified standards for sludge use and disposal. Technical requirements may be derived from the Virginia Department of Health's Biosolids Use Regulations, 12 VAC 5-585-10 et seq. The facility includes a treatment works treating domestic sewage.

l) Sludge Reopener (Outfall 111). The VPDES Permit Regulation at 9 VAC 25-31-200.C.4. requires all permits issued to treatment works treating domestic sewage (including sludge-only facilities) include a reopener clause allowing incorporation of any applicable standard for sewage sludge use or disposal promulgated under Section 405(d) of the CWA. The facility includes a sewage treatment works.

m) CTC, CTO Requirement (Outfall 111). The Code of Virginia § 62.1-44.19; Sewage Collection and Treatment Regulations, 9 VAC 25-790 requires that all treatment works treating wastewater obtain a Certificate to Construct prior to commencing construction and to obtain a Certificate to Operate prior to commencing operation of the treatment works.

n) Materials Handling/Storage. 9 VAC 25-31-50 A prohibits the discharge of any wastes into State waters unless authorized by permit. Code of Virginia §62.1-44.16 and §62.1-44.17 authorize the Board to regulate the discharge of industrial waste or other waste. The purpose of this condition is to assure stored materials will not enter storm water.

o) Notification Levels. The permittee shall notify the Department as soon as they know or have reason to believe:

a. That any activity has occurred or will occur which would result in the discharge, on a routine or frequent basis, of any toxic pollutant which is not limited in this permit, if that discharge will exceed the highest of the following notification levels:

(1) One hundred micrograms per liter;

(2) Two hundred micrograms per liter for acrolein and acrylonitrile; five hundred micrograms per liter for 2,4-dinitrophenol and for 2-methyl-4,6-dinitrophenol; and one milligram per liter for antimony;

(3) Five times the maximum concentration value reported for that pollutant in the permit application; or

(4) The level established by the Board.

b. That any activity has occurred or will occur which would result in any discharge, on a nonroutine or infrequent basis, of a toxic pollutant which is not limited in this permit, if that discharge will exceed the highest of the following notification levels:

(1) Five hundred micrograms per liter;

(2) One milligram per liter for antimony;

(3) Ten times the maximum concentration value reported for that pollutant in the permit application; or

(4) The level established by the Board.

p) PCB Discharge. Condition regarding discharge of PCB – per 40 CFR 423.13(a) stating there shall be no discharge of polychlorinated biphenyl compounds (PCB) such as those commonly used for transformer fluid.

q) Liquid Radioactive Waste Discharge. Condition regarding liquid radioactive waste dischargers per Best Engineering Judgment and per 40 CFR Part 20 and 10 CFR Part 50.

r) Post 316(a) Monitoring - Temperature and Fishery Monitoring.

The permittee is being granted a variance in accordance with section 316(a) of the Clean Water Act (see Part 23 of the Fact Sheet). In accordance with this variance, it is appropriate that Dominion continue to monitor the effects of the heat from the cooling water to see if there are any impacts to the biology of the lake and river.

Dominion will be required to submit a monitoring plan describing sample types, frequencies and methods for both physical-chemical characteristics and fish populations. It is expected that Dominion will continue the same annual studies that have been conducted subsequent to the completion of the 316(a) study in 1986.

Temperature Monitoring - Dominion is required to conduct water temperature monitoring in both Lake Anna, the North Anna River and in the WHTF. Dominion has been conducting this monitoring since 1986 when the variance was originally issued. The purpose for monitoring in the lake and river is to assess temperature variations from the discharge at 001. Staff believes such monitoring is needed for continued verification of the original 316(a) study results and for justification of the variance. The purpose of the monitoring within the WHTF is to assess heat dissipation and for data collection for future modeling exercises; it may also be used by Dominion to inform adjacent landowners of water temperatures.

Continuous temperature monitoring has occurred at 11 locations; 7 in the lake, 1 in the river, and 3 in the WHTF. The locations and station identifications are in Attachment 11. These locations shall continue with this permit reissuance.

Fishery Monitoring - Dominion is required to conduct surveys of the fish populations in Lake Anna and the North Anna River. The purpose is the continual verification of the original 316(a) study, that the temperature of the discharge is not causing any impairment to a healthy and diverse fish population of the lake or river, and for justification of the variance. The survey shall be in accordance with the methods used in the original 316(a) study and used annually thereafter. Any changes to the survey shall be submitted to DEQ for concurrence prior to implementing the change. DEQ will consult with the Department of Game and Inland Fisheries in assessing survey results and any changes to the survey methods.

Results from the temperature monitoring and fish surveys shall be summarized and reported to DEQ for the preceding calendar year by March 31. The reports shall also include an analysis of the results and recommendations for monitoring changes. The annual report will contain calibration and validation of the temperature recording equipment.

See Part 23 of the fact sheet for further discussion of the temperature variance.

s) Use of Chemical Additives. Required since chemical additives have the potential to impact several of this facility's discharges.

t) Discharge of Wastewater from Particle Separators. Condition regarding operation of particle separators – continued from the previous permit, based on Best Engineering Judgment.

u) Debris in Intake Trash Rack. Condition regarding debris collected – continued from previous permit, per Best Engineering Judgment.

v) 316(b) of the Clean Water Act.
The facility includes a cooling water intake structure governed by §316(b) of the Clean Water Act which requires that the location, design, construction and capacity of the cooling water intake structures reflect the "best technology available for minimizing adverse environmental impact". The North Anna – May, 1985 environmental report on impingement and entrainment studies conducted at the facility indicated minimal or no adverse environmental impact. The special condition requires continued compliance with §316(b) and

submittal of new data that was recently collected in response to EPA's Phase II requirements. Collected data and any changes to the intake structures or conditions will be reevaluated at each reissuance to monitor continued compliance with the requirement. The condition also includes a reopener, should further 316(b) related conditions become necessary once the EPA Phase II rule is finalized or a new BPJ determination is required.

Permit Section Part II. Part II of the permit contains standard conditions that appear in all VPDES Permits. In general, these standard conditions address the responsibilities of the permittee, reporting requirements, testing procedures and records retention.

22. Changes to the Permit from the Previously Issued Permit:

a) Special Conditions:
1. An annual report summarizing the results from temperature monitoring and fish surveys shall be reported to DEQ for the preceding calendar year by March 31.

b) Monitoring and Effluent Limitations:
1. For Internal Outfalls 103, 104, 107, 108, 109, 110, 112, 113, 114 and 115, the monitoring frequency has been reduced to once per year due to good compliance record, large volume of dilution in WHTF and toxics monitoring performed at Outfall 001.
2. Internal Outfall 101 has been established to better facilitate the reporting of heat rejection. This outfall is being established to reflect the fact that the heat rejection limit does not account for heat removed from the WHTF.
3. Intake flow and heat rejection reporting have been eliminated from Outfall 001 due to the establishment of Internal Outfall 101.

23. Variances/Alternate Limits or Conditions:

The permittee has requested alternative effluent limitations with the reissuance of this permit under Section 316(a) of the Clean Water Act, with 9 VAC25-260-90 and with 9 VAC25-140.E of the Water Quality Standards. The purpose of the variance is because the water temperature in Lake Anna, in the vicinity of Outfall 001, and in the shallow reaches near all of its tributaries, occasionally exceeds the maximum criteria of 32°C. Without the variance Dominion would be subject to enforcement actions. Attachment 11 is a summary of temperature data.

Pursuant to a Study Plan approved by the State Water Control Board, Virginia Power conducted a 316(a) study in 1984 and 1985 and submitted a 316(a) Demonstration Report on June 24, 1986. The basis for demonstrating that alternative temperature effluent limitations are justifiable is as follows:

- A balanced indigenous community has been maintained;
- The community has not sustained prior appreciable harm;
- A shift toward nuisance species in the receiving water has not occurred and is not likely to occur;
- A zone of passage will not be impaired to the extent that it will not provide for normal movement of populations of dominant species of fish, and economically important species of fish, shellfish, and wildlife;
- There will be no adverse impact of threatened or endangered species;
- There will be no destruction of rate or unique habitat; and
- The use of biocides, such as chlorine, has not resulted in appreciable harm to the community.

The State Water Control Board reviewed the study and demonstration and in September 1986 concluded that the above conditions were met. As such, the Board found that effluent limitations more stringent than the thermal limitations included in this permit are not necessary to assure the protection and propagation of a balanced indigenous community of shellfish, fish, and wildlife in Lake Anna and the North Anna River downstream of the lake.

By letter dated June 28, 2005, Dominion formally stated that conditions have not changed substantially and thereby requested continuation of the 316(a) variance. The basis for their conclusion is the continuous temperature monitoring and the annual fish survey results conducted over the past five years. Based on a review of the annual reports and consultation with DGIF, staff believes that the variance should be continued with the reissuance of the permit. Part 21 of the Fact Sheet explains monitoring requirements that accompany the granting of the variance.

24. Public Notice Information:

First Public Notice Date: June 14, 2007 Second Public Notice Date: June 21, 2007

Public Notice Information is required by 9 VAC 25-31-280 B. All pertinent information is on file and may be inspected, and copied by contacting the: Northern Virginia DEQ Regional Office, 13901 Crown Court, Woodbridge, VA 22193, Telephone No. (703) 583-3853, sdmackert@deq.virginia.gov. See Attachment 12 for a copy of the public notice document.

Persons may comment in writing or by email to the DEQ on the proposed permit action, and may request a public hearing, during the comment period. Comments shall include the name, address, and telephone number of the writer, and shall contain a complete, concise statement of the factual basis for comments. Only those comments received within this period will be considered. The DEQ may decide to hold a public hearing if public response is significant. Requests for public hearings shall state the reason why a hearing is requested, the nature of the issues proposed to be raised in the public hearing and a brief explanation of how the requester's interests would be directly and adversely affected by the proposed permit action. Following the comment period, the Board will make a determination regarding the proposed permit action. This determination will become effective, unless the DEQ grants a public hearing. Due notice of any public hearing will be given.

25. 303 (d) Listed Stream Segments and Total Max. Daily Loads (TMDL):

Lake Anna was listed on the 303(d) for Fish Tissue – PCBs with the source unknown. TMDL is scheduled for 2014.

TMDL Reopener: This special condition is to allow the permit to re-opened if necessary to bring it in compliance with any applicable TMDL that may to developed and approved for the receiving water.

26. Waste Heat Treatment Facility:

As discussed in Part 15.b, the SCC authorized the construction of this facility to serve as cooling lagoons. Since its construction, Dominion Virginia Power has used the facility for heat dissipation from the water prior to its reentry into Lake Anna. Dominion has monitored the temperature of these waters for the purpose of internal controls and model verification.

Because the only waste being treated in the WHTF is temperature, Dominion has allowed adjacent landowners access and use of the water. There is no public access to the WHTF. Terms for access and use are defined in a signed deed agreement for each property owner (see Attachment 13). The terms of the agreement are that the uses of the WHTF shall not contravene the purpose of the facility as a cooling lagoon.

With this reissuance, representatives of adjacent land owners have asked that the permit contain specific maximum temperature levels in the WHTF so as to protect the health of the people using it for recreation. Because the WHTF is a treatment lagoon that is designed and used for its intended purposes for heat dissipation, staff does not have basis for temperature controls since the facility is being used within its defined design parameters.

By letter dated November 30, 2006, the Attorney General of Virginia has concluded that the state cannot place temperature restrictions on the WHTF (see Attachment 7). The only conditions staff could place on the facility are those that would restrict access and/or use of the facility such as is routinely done with other types of treatment lagoons. Staff does not believe such restriction measures are warranted in the permit.

Following discussions with staff, State Health Department, and some adjacent landowners, Dominion has voluntarily installed a continuous temperature monitor at the end of the discharge canal to the WHTF and will make the information available to the public and landowners on Dominion's website in real time. Staff believes this is a reasonable response to the landowners concerns without requiring Dominion to prohibit use and access.

27. Additional Comments:

Previous Board Action(s): None

Staff Comments: None

Public Comment: Staff received many comments on the draft permit. The majority of comments centered on the regulatory status of the WHTF/Cooling Lagoons and objection to the 316(a) variance.

EPA Checklist: The checklist can be found in Attachment 14.

NPDES PERMIT RATING WORK SHEET

☐ Regular Addition
☐ Discretionary Addition
☐ Score change, but no status Change
☐ Deletion

VPDES NO. : VA0052451

Facility Name: Dominion – North Anna Power Station
City / County: Louisa
Receiving Water: Lake Anna
Reach Number:

Is this facility a steam electric power plant (sic =4911) with one or more of the following characteristics?

1. Power output 500 MW or greater (not using a cooling pond/lake)
2. A nuclear power Plant
3. Cooling water discharge greater than 25% of the receiving stream's 7Q10 flow rater

☒ **Yes; score is 600 (stop here)** ☐ NO; (continue)

Is this permit for a municipal separate storm sewer serving a population greater than 100,000?

☐ YES; score is 700 (stop here)
☐ NO; (continue)

FACTOR 1: Toxic Pollutant Potential

PCS SIC Code: _____ Primary Sic Code: _____ Other Sic Codes: _____ _____ _____

Industrial Subcategory Code: _____ (Code 000 if no subcategory)

Determine the Toxicity potential from Appendix A. Be sure to use the TOTAL toxicity potential column and check one)

Toxicity Group	Code	Points	Toxicity Group	Code	Points	Toxicity Group	Code	Points
☐ No process waste streams	0	0	☐ 3.	3	15	☐ 7.	7	35
☐ 1.	1	5	☐ 4.	4	20	☐ 8.	8	40
☐ 2.	2	10	☐ 5.	5	25	☐ 9.	9	45
			☐ 6.	6	30	☐ 10.	10	50

Code Number Checked: _____

Total Points Factor 1: N/A

FACTOR 2: Flow/Stream Flow Volume (Complete either Section A or Section B; check only one)

Section A – Wastewater Flow Only considered

Wastewater Type (see Instructions)			Code	Points
Type I:	Flow < 5 MGD	☐	11	0
	Flow 5 to 10 MGD	☐	12	10
	Flow > 10 to 50 MGD	☐	13	20
	Flow > 50 MGD	☐	14	30
Type II:	Flow < 1 MGD	☐	21	10
	Flow 1 to 5 MGD	☐	22	20
	Flow > 5 to 10 MGD	☐	23	30
	Flow > 10 MGD	☐	24	50
Type III:	Flow < 1 MGD	☐	31	0
	Flow 1 to 5 MGD	☐	32	10
	Flow > 5 to 10 MGD	☐	33	20
	Flow > 10 MGD	☐	34	30

Section B – Wastewater and Stream Flow Considered

Wastewater Type (see Instructions)	Percent of Instream Wastewater Concentration at Receiving Stream Low Flow		Code	Points
Type I/III:	< 10 %	☐	41	0
	10 % to < 50 %	☐	42	10
	> 50%	☐	43	20
Type II:	< 10 %	☐	51	0
	10 % to < 50 %	☐	52	20
	> 50 %	☐	53	30

Code Checked from Section A or B: _____

Total Points Factor 2: N/A

NPDES PERMIT RATING WORK SHEET

FACTOR 3: Conventional Pollutants

(only when limited by the permit)

A. Oxygen Demanding Pollutants: (check one) ☐ BOD ☐ COD ☐ Other: _____

Permit Limits: (check one)	Code	Points
☐ < 100 lbs/day	1	0
☐ 100 to 1000 lbs/day	2	5
☐ > 1000 to 3000 lbs/day	3	15
☐ > 3000 lbs/day	4	20

Code Number Checked: _____

Points Scored: **N/A**

B. Total Suspended Solids (TSS)

Permit Limits: (check one)	Code	Points
☐ < 100 lbs/day	1	0
☐ 100 to 1000 lbs/day	2	5
☐ > 1000 to 5000 lbs/day	3	15
☐ > 5000 lbs/day	4	20

Code Number Checked: _____

Points Scored: **N/A**

C. Nitrogen Pollutants: (check one) ☐ Ammonia ☐ Other: _____

Permit Limits: (check one) *Nitrogen Equivalent*	Code	Points
☐ < 300 lbs/day	1	0
☐ 300 to 1000 lbs/day	2	5
☐ > 1000 to 3000 lbs/day	3	15
☐ > 3000 lbs/day	4	20

Code Number Checked: _____

Points Scored: **N/A**

Total Points Factor 3: **N/A**

FACTOR 4: Public Health Impact

Is there a public drinking water supply located within 50 miles downstream of the effluent discharge (this include any body of water to which the receiving water is a tributary)? A public drinking water supply may include infiltration galleries, or other methods of conveyance that ultimately get water from the above reference supply.

☐ YES; (If yes, check toxicity potential number below)

☐ NO; (If no, go to Factor 5)

Determine the *Human Health* potential from Appendix A. Use the same SIC doe and subcategory reference as in Factor 1. (Be sure to use the *Human Health* toxicity group column – check one below)

Toxicity Group	Code	Points	Toxicity Group	Code	Points	Toxicity Group	Code	Points
☐ No process waste streams	0	0	☐ 3.	3	0	☐ 7.	7	15
☐ 1.	1	0	☐ 4.	4	0	☐ 8.	8	20
☐ 2.	2	0	☐ 5.	5	5	☐ 9.	9	25
			☐ 6.	6	10	☐ 10.	10	30

Code Number Checked: _____

Total Points Factor 4: **N/A**

NPDES PERMIT RATING WORK SHEET

FACTOR 5: Water Quality Factors

A. Is (or will) one or more of the effluent discharge limits based on water quality factors of the receiving stream (rather than technology-base federal effluent guidelines, or technology-base state effluent guidelines), or has a wasteload allocation been to the discharge

	Code	Points
☐ YES	1	10
☐ NO	2	0

B. Is the receiving water in compliance with applicable water quality standards for pollutants that are water quality limited in the permit?

	Code	Points
☐ YES	1	0
☐ NO	2	5

C. Does the effluent discharged from this facility exhibit the reasonable potential to violate water quality standards due to whole effluent toxicity?

	Code	Points
☐ YES	1	10
☐ NO	2	0

Code Number Checked: A _____ B _____ C _____

Points Factor 5: A _____ + B _____ + C _____ = **N/A**

FACTOR 6: Proximity to Near Coastal Waters

A. Base Score: Enter flow code here (from factor 2) _____

Check appropriate facility HPRI code (from PCS):

	HPRI#	Code	HPRI Score
☐	1	1	20
☐	2	2	0
☐	3	3	30
☐	4	4	0
☐	5	5	20

Enter the multiplication factor that corresponds to the flow code: _____

Flow Code	Multiplication Factor
11, 31, or 41	0.00
12, 32, or 42	0.05
13, 33, or 43	0.10
14 or 34	0.15
21 or 51	0.10
22 or 52	0.30
23 or 53	0.60
24	1.00

HPRI code checked : _____

Base Score (HPRI Score): _____ (Multiplication Factor) _____ = _____

B. Additional Points – NEP Program

For a facility that has an HPRI code of 3, does the facility discharge to one of the estuaries enrolled in the National Estuary Protection (NEP) program (see instructions) or the Chesapeake Bay?

	Code	Points
☐	1	10
☐	2	0

C. Additional Points – Great Lakes Area of Concern

For a facility that has an HPRI code of 5, does the facility discharge any of the pollutants of concern into one of the Great Lakes' 31 area's of concern (see instructions)?

	Code	Points
☐	1	10
☐	2	0

Code Number Checked: A _____ B _____ C _____

Points Factor 6: A _____ + B _____ + C _____ = **N/A**

NPDES PERMIT RATING WORK SHEET

SCORE SUMMARY

Factor	Description	Total Points
1	Toxic Pollutant Potential	
2	Flows / Streamflow Volume	
3	Conventional Pollutants	
4	Public Health Impacts	
5	Water Quality Factors	
6	Proximity to Near Coastal Waters	
	TOTAL (Factors 1 through 6)	

S1. Is the total score equal to or grater than 80 [X] **YES; (Facility is a Major)** [ ] NO

S2. If the answer to the above questions is no, would you like this facility to be discretionary major?

[ ] NO

[ ] YES; (Add 500 points to the above score and provide reason below:

Reason: _____

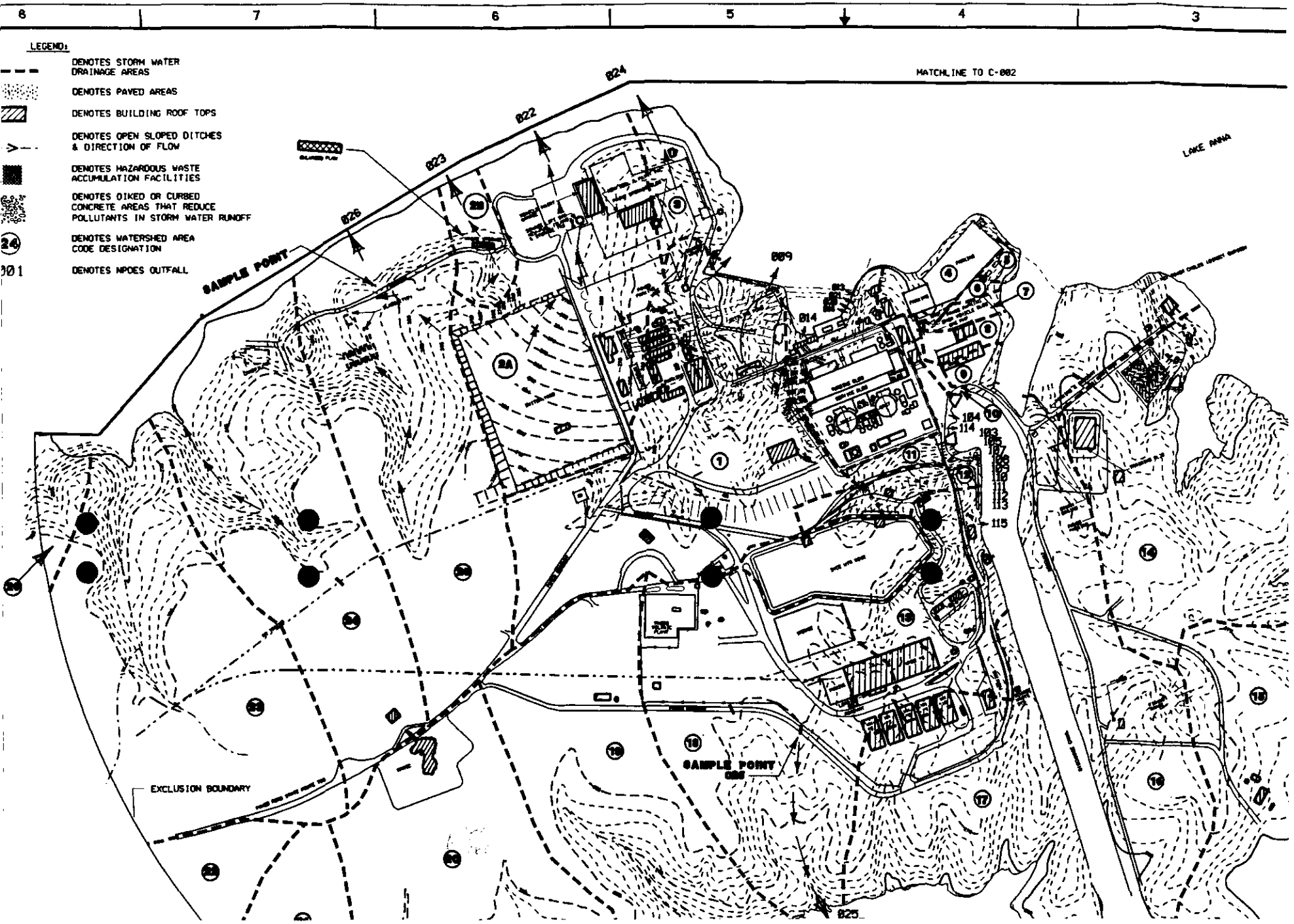
NEW SCORE : **600**

OLD SCORE : _____

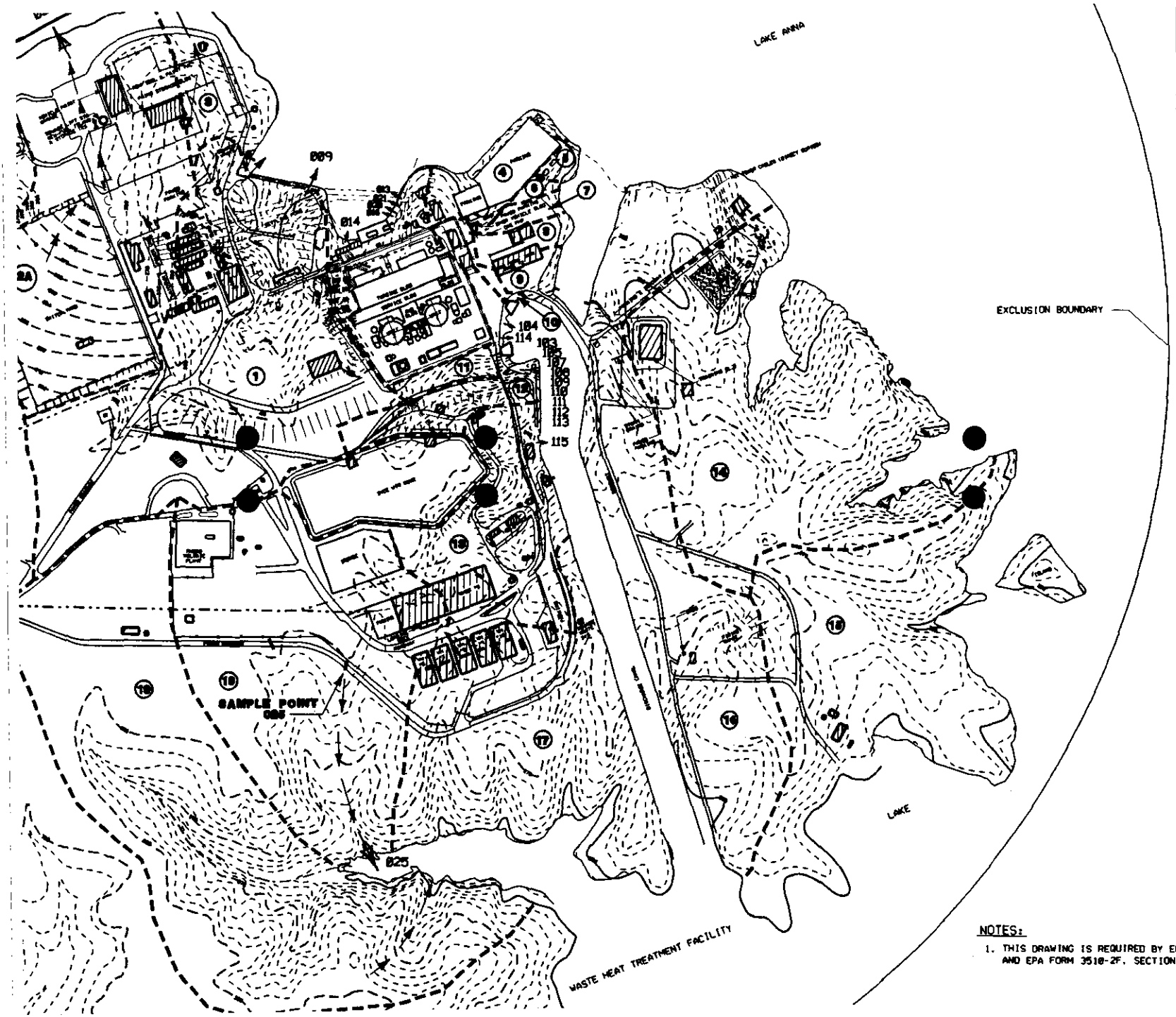
Permit Reviewer's Name : Susan Mackert

Phone Number: (703) 583-3853

Date: June 1, 2007



Attachment 2
Page 1 of 2

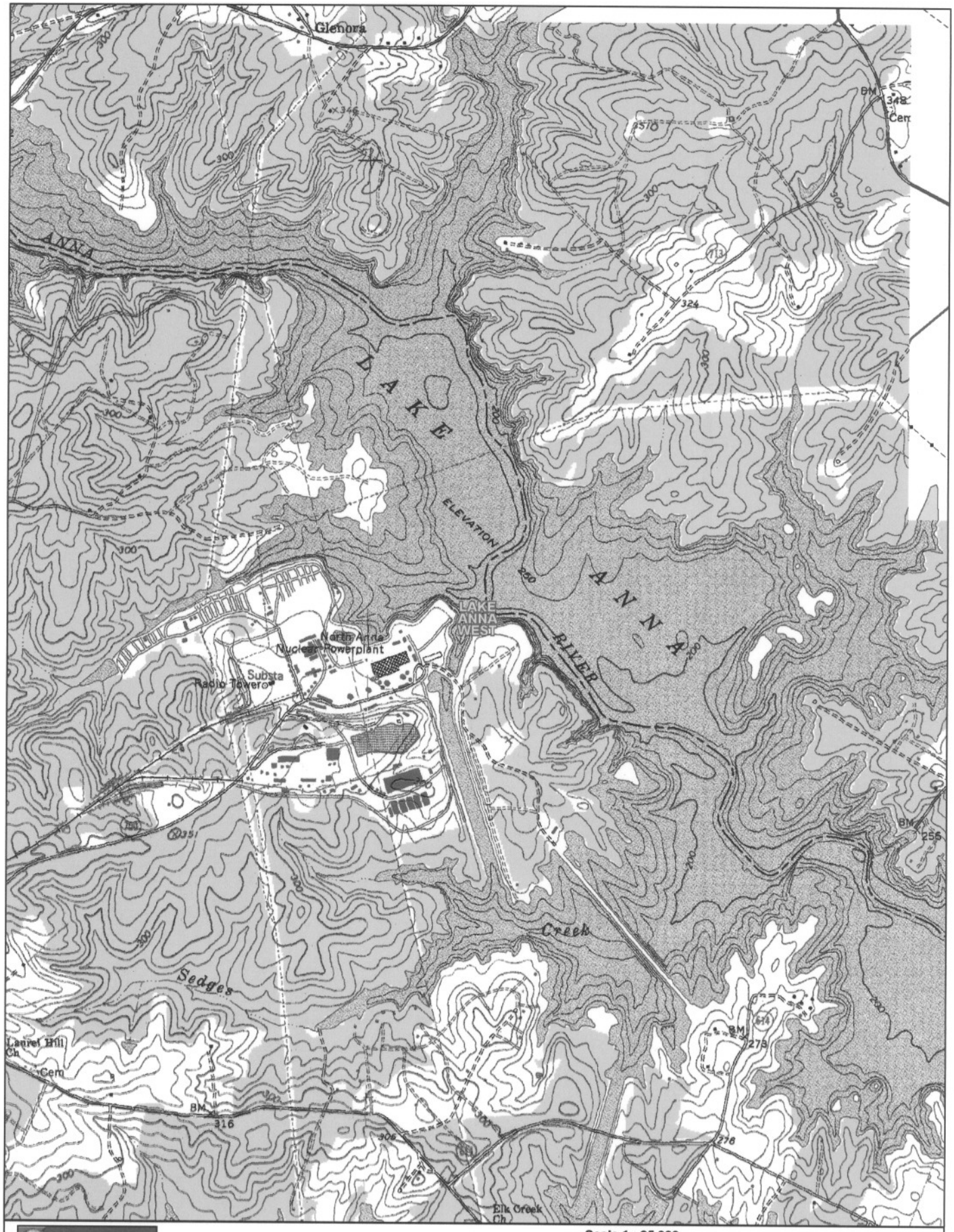


NO.	EXTERNAL OUTFALLS
001	DISCHARGE OF CONDENSER COOLING WATER FROM WHTF AT DIKE 3
009	SETTLING POND
013	TURBINE BUILDING SUMP & STORM WATER
014	TURBINE BUILDING SUMP & STORM WATER
016	INTAKE SCREEN WASH WATER
020	REVERSE OSMOSIS REJECT
021	REVERSE OSMOSIS DRAIN LINE
022	DRAINAGE AREA #2A (STORM WATER ONLY)
023	DRAINAGE AREA #2B (STORM WATER ONLY)
024	DRAINAGE AREA #3 (STORM WATER ONLY)
025	DRAINAGE AREA #18 (STORM WATER ONLY)
026	DRAINAGE AREA #25 (STORM WATER ONLY)
NO.	INTERNAL OUTFALLS
103	PROCESS WASTE CLARIFIER
104	OIL/WATER SEPARATOR, TURBINE BUILDING SUMP & STORM WATER
106	BEARING COOLING TOWER BLOWDOWN
107	BEARING COOLING SYSTEM DISCHARGE
108	SERVICE WATER OVERBOARD
109	HOT WELL DRAIN - UNIT 1
110	HOT WELL DRAIN - UNIT 2
111	MAIN WASTE TREATMENT PLANT
112	STEAM GENERATOR BLOWDOWN - UNIT 1
113	STEAM GENERATOR BLOWDOWN - UNIT 2
114	SERVICE WATER TIE-IN VAULT DRAIN
115	SERVICE WATER SYSTEM BLOWDOWN

NOTES:

1. THIS DRAWING IS REQUIRED BY EPA FORM 3510-1, SECTION XI AND EPA FORM 3510-2F, SECTION III.

F E D C B



Attachment 3
Page 1 of 1

NORTH ANNA POWER STATION POTENTIAL POLLUTANTS TO SURFACE WATER

SYSTEM	RELEASE MECHANISM	RELEASE PATH	FREQUENCY AND AMOUNT	CHEMICAL	MAX. CONC.
Bearing Cooling (BC) Water	Vacuum Priming Pump and cooling water discharges	Turbine Building Sump	60 GPM total (one pump per unit at 30 GPM) Continual	Zinc Chloride - Nalco 7384 Phosphate - PCL 713 Biocide - Nalco 2894 Bromine - Acti Brom 1318 Sodium Hypochlorite	1.0 ppm; 500 gal – Turbine Building Basement 25 ppm; 2,600 gal – Turbine Building Basement 28 ppm; 400 gal tote – not in use 22 ppm; 400 gal tote – BC Tower 34 ppm; 330 gal tote – BC tower
	BC Pump Strainer Blowdown	Circulating Water	400 GPM for 3 min. intervals as requred		
	BC Line Draining During Maintenance	Turbine Building Sump	200,000 gals. Max. per unit		
	Blowdown	Circulating water	Maximum of 200 gpm		
Service Water Cooling Water	SW Line Draining During Maintenance	Sump, Storm Drain and Circulation Water	150,000 Gal max	Calgon TRC-256 ONDEO H-130 Calgon H-901G Calgon H-300 Calgon Poly-E-Z 7736	700 ppm; tanker truck to reservoir 25 ppm; 2000 gal, Chemical Additions Building 1 ppm; 1000 #, Chemical Additions Building 75 ppm; not in use 10 ppm; not in use
	Overflow	Circulating water when reservoir too full	Infrequent, Amount unknown		
	Blowdown - intermittent	Circulating water	Maximum of 70 gpm		
	Batch Blowdown	Discharge canal	As needed to maintain cycles of concentration 900 gpm		
Condenser Hotwell	Draining	Circulating water	200,000 gallons per Hotwell	ETA Hydrazine Ammonia	4.0 ppm; 400 gal tote – Turbine Building 1.0 ppm; 400 gal tote – Turbine Building 25 ppm; 55 gal drum - Turbine Building
Steam Generator Wet Layup	Draining	Circulating water	43,000 gallons per Steam Generator	Hydrazine Ammonia ETA	500 ppm 4 gal of NH4OH per SG 20 ppm

December 21, 2005
MEMORANDUM

To: Permit Reissuance File

From: Christine Joyce, Permit Writer

Subject: Site inspection of Dominion – North Anna Power Station VA0052451

The purpose of this memo is to detail the facility site inspection conducted of subject facility on October 14, 2005 by Christine Joyce and Tom Faha, Water Permit Manager. Dominion representatives present included Joyce Livingstone, Environmental Specialist III and A. Carter Cooke, Senior Environmental Compliance Coordinator.

This facility is a two unit nuclear station supplying Dominion Virginia Power with more than 20 percent of its total generation. It is the largest nuclear station in Virginia and can generate almost 2 million kilowatts of electric power per day.

The facility consisted of internal and external outfalls. Effluent at external outfalls appeared clear and of normal appearance. Internal outfalls and stormwater outfalls were within restricted areas and were not observed. The following table 1 lists the outfalls observed. All outfalls ultimately discharged out of Outfall 001 at Dike 3 with a total discharge flow of 2057 MGD. Outfall 001 discharges to Lake Anna.

Table 1

Outfall #	Description	Outfall Latitude and Longitude
001 **Observed**	Discharge of Condenser Cooling Water from WHTF at Dike 3.	38° 00' 30" N 77° 43' 43"W
009 **Observed**	Ground Water, Storm Water, and Backwash from Sand Filters and Reverse Osmosis Units.	38° 03' 47" N 77° 47' 56"W
013 **Observed**	Turbine Building Sump #1 and Storm water.	38° 03' 47" N 77° 47' 56"W
014 **Observed**	Drainage Area #31 (Stormwater Only).	38° 03' 47" N 77° 47' 56"W
016 **Observed**	Intake Screen Wash Water.	38° 03' 47" N 77° 47' 56"W
020 **Observed**	Reverse Osmosis Reject.	38° 03' 47"N 77° 47' 56"W
021 **Observed**	Reverse Osmosis Drain Line.	38° 03' 47"N 77° 47' 56"W
022 ***Not Observed***	Drainage Area #2A (Stormwater Only).	38° 03' 55"N 77° 47' 55"W
023 ***Not Observed***	Drainage Area #2B (Stormwater Only).	38° 03' 53"N 77° 47' 58"W
024 ***Not Observed***	Drainage Area #3 (Stormwater Only).	38° 03' 58"N 77° 47' 44"W

Table 1 (cont'd)		
025 ***Not Observed***	Drainage Area #18 (Stormwater Only).	38° 03'08"N 77° 47' 25"W
026 ***Not Observed***	Drainage Area #25 (Stormwater Only).	38° 03' 50"N 77° 48' 05"W
103 *Not* ***Observed***	Process Waste Clarifier.	38° 03' 47" N 77° 47' 56"W
104 **Observed**	Oil/Water Separator & Stormwater.	38° 03' 47" N 77° 47' 56"W
105 **Observed**	Bearing Cooling Tower Blowdown.	38° 03' 47"N 77° 47' 56"W
107 ***Not Observed***	Bearing Cooling System Discharge – Lake to Lake Operation.	38° 03' 47"N 77° 47' 56"W
108 ***Not Observed***	Service Water Overflow.	38° 03' 47" N 77° 47' 56"W
109 ***Not Observed***	Hot Well Drain Unit 1.	38° 03' 47"N 77° 47' 56"W
110 ***Not Observed***	Hot Well Drain Unit 2.	38° 03' 47"N 77° 47' 56"W
111 **Observed**	Main Sewage Treatment Plant.	38° 03' 47"N 77° 47' 56"W
112 ***Not Observed***	Steam Generator Blowdown Unit 1.	38° 03' 47"N 77° 47' 56"W
113 ***Not Observed***	Steam Generator Blowdown Unit 2.	38° 03' 47"N 77° 47' 56"W
114 **Observed**	Service Water Pipe Vault Drain.	38° 03' 47"N 77° 47' 56"W
115 ***Not Observed***	Service Water System Blowdown.	38° 03' 47"N 77° 47' 56"W

Observed: On the day of the visit, Outfall 001 at Dike 3 showed water levels at 250 ft. on the cold side, and 250.6 ft. on the hot side.

Requests made by permittee:
Outfall 103 – Mr. Cooke requested the outfall to be waived from sampling because of infrequent discharge.
Outfall 014 – Mr. Cooke requested the outfall to be waived from sampling because there are no industrial activities for the outfall, and the discharge could be represented by the storm water sampling.
Staff response:
Outfall 103 sampling frequency has been reduced to 1/Y due to good compliance record, large volume of dilution in the WHTF, and toxics monitoring performed at Outfall 001.
Outfall 014 sampling has changed to be consistent with storm water outfall sampling. With this permit cycle, Outfall 014 has been deemed to release storm water only from the back half of the outside of the turbine building. No industrial influence occurs.

Pictures of the facility were taken during the inspection and will be included in the permit file for future reference.

Outfall 104 – Oil/Water Separator & SW

Outfall 104 – Far view

Structure for Units 1&2

Detail of structure for Units 1&2

Bearing Cooling Tower (Outfall 105 is in basement)

Chemical additives for Bearing Cooling Tower

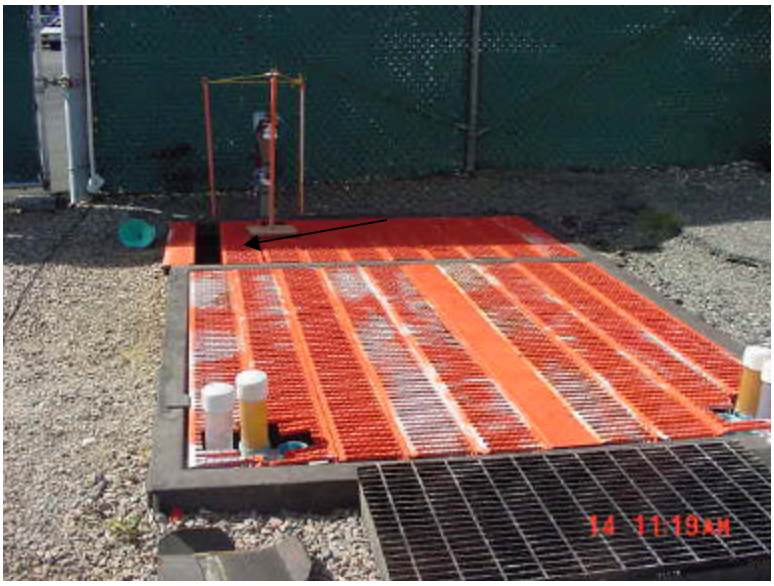
Outfall 020 – Reject for RO

Detail of pipe that leads to Outfall 020

Outfall 021 – Reverse Osmosis Drain Line

Outfall 013 – Turbine Bldg Sump 1 & 2 and SW

Outfall 016 - Intake Screen Wash Water



Outfall 111 - Main Sewage Treatment Plant: 2 chlorine contact tanks and final effluent. Samples taken at weir shown at arrow.

Clarifiers

Discharge Canal (ends at buoys). Lagoon 1 is in distance beyond buoys. Thermal monitoring performed at buoys.

Outfall 114 – Service Water Vault Drain

Service water reservoir

Settling pond leading to Outfall 009

Cont'd settling pond leading to Outfall 009

Outfall 009 - Pipe leading from settling pond

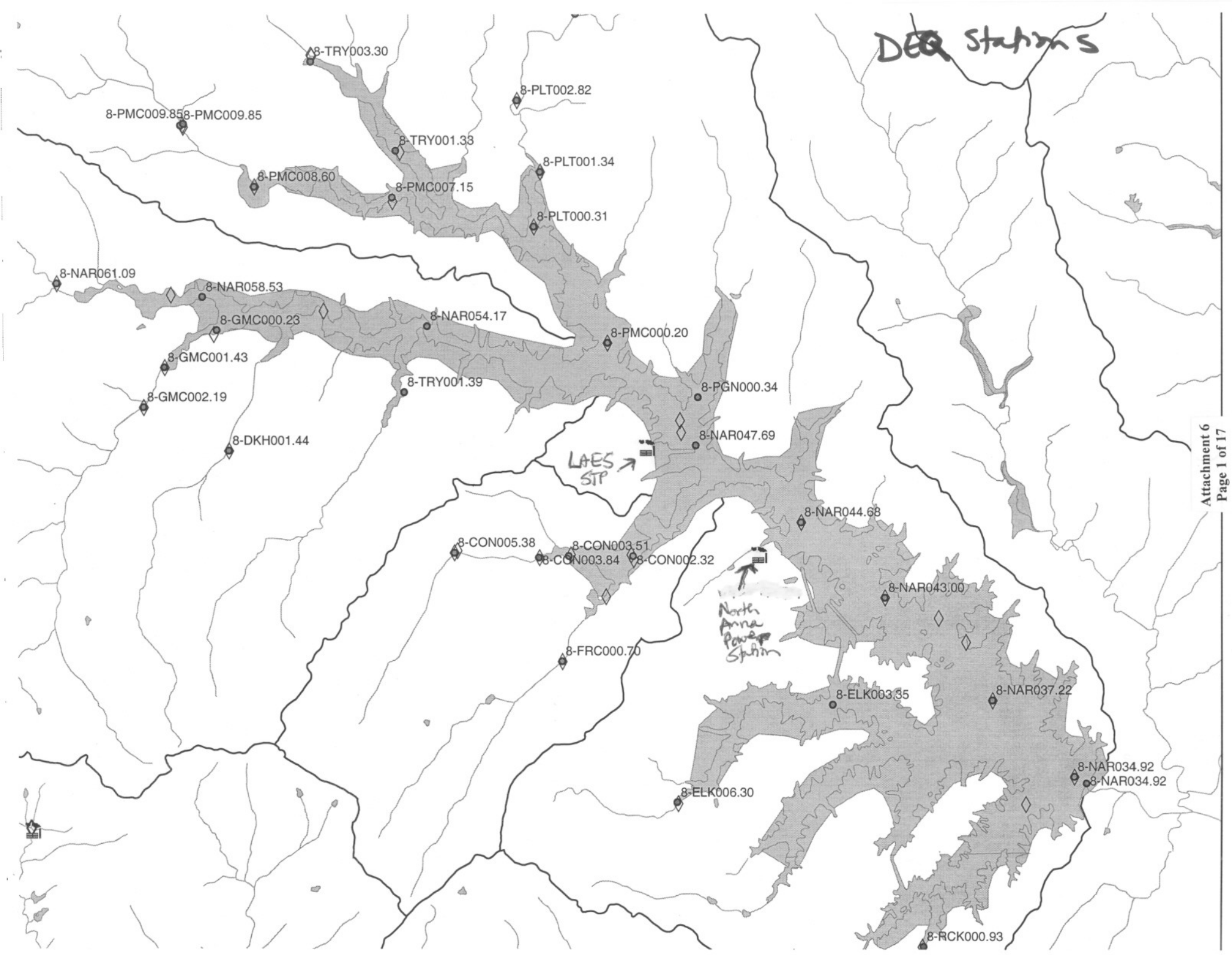
Outfall 014 – Storm water only

Outfall 001 (at Dike 3) – View of water level on side of Lake Anna – 250 ft.

Outfall 001 (at Dike 3) – View of water level on side of Lagoon 3 – 250.6 ft.

Lake Anna beyond Dike 3, with dam seen in distance

Another view of Lake Anna beyond Dike 3. Temperature monitored at buoys at arrow towards dam.


DEQ Stations
8-TRY003.30
8-PLT002.82
8-PMC009.85
8-PMC009.85
8-TRY001.33
8-PLT001.34
8-PMC008.60
8-PMC007.15
8-PLT000.31
8-NAR061.09
8-NAR058.53
8-GMC000.23
8-NAR054.17
8-PMC000.20
8-GMC001.43
8-TRY001.39
8-PGN000.34
8-GMC002.19
8-NAR047.69
8-DKH001.44
LAES STP
8-NAR044.68
8-CON005.38
8-CON003.51
8-CON003.84
8-CON002.32
8-NAR043.00
North Anna Power Station
8-FRC000.70
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8-ELK006.30
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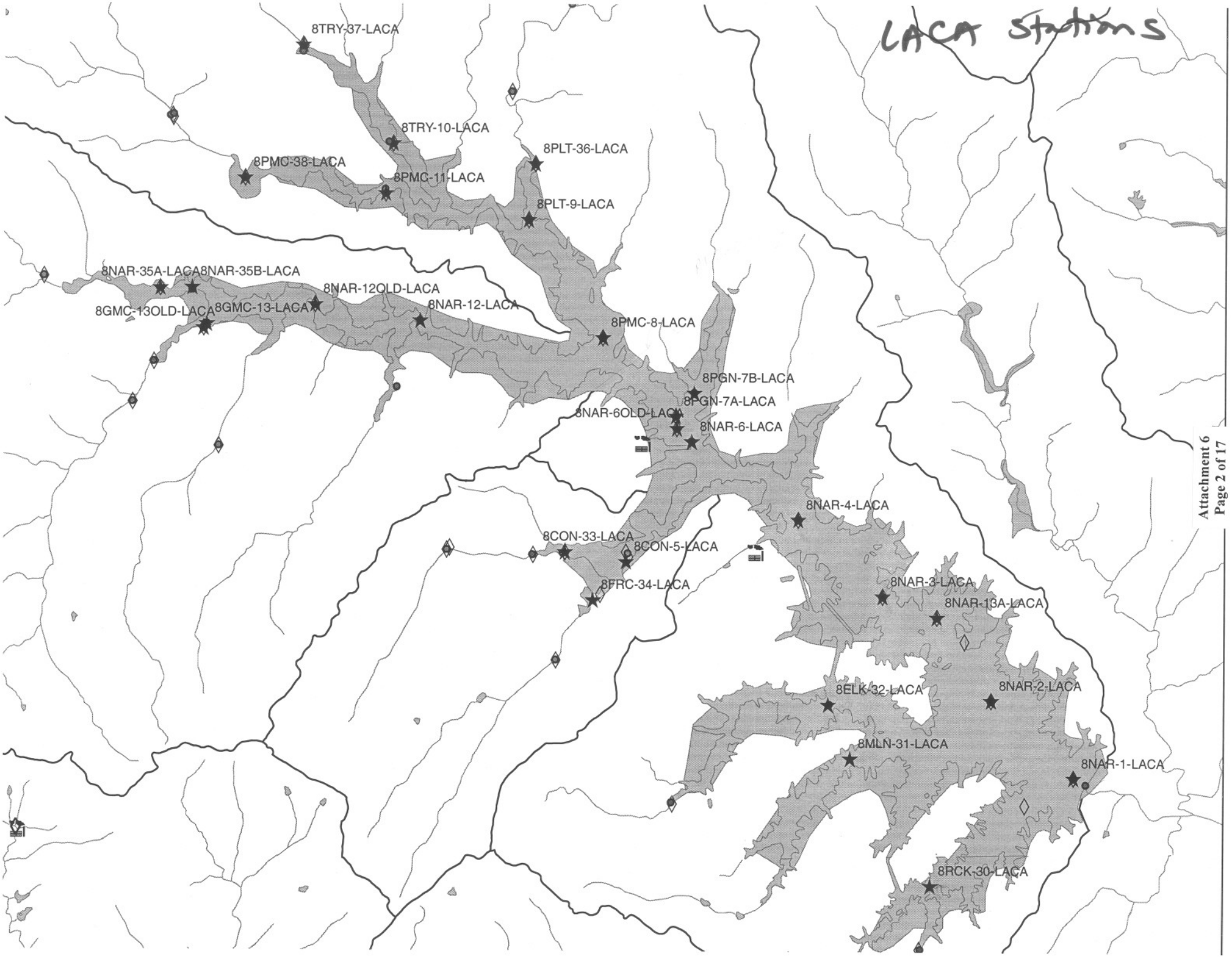
LACA Stations
8TRY-37-LACA
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8PLT-36-LACA
8PMC-38-LACA
8PMC-11-LACA
8PLT-9-LACA
8NAR-35A-LACA
8NAR-35B-LACA
8NAR-12OLD-LACA
8GMC-13OLD-LACA
8GMC-13-LACA
8NAR-12-LACA
8PMC-8-LACA
8PGN-7B-LACA
8PGN-7A-LACA
8NAR-6OLD-LACA
8NAR-6-LACA
8NAR-4-LACA
8CON-33-LACA
8CON-5-LACA
8FRC-34-LACA
8NAR-3-LACA
8NAR-13A-LACA
8ELK-32-LACA
8NAR-2-LACA
8MLN-31-LACA
8NAR-1-LACA
8RCK-30-LACA

Key to Map

Station ID	Latitude	Longitude	Watershed Code	Description	2001	2002	2003	2004
8CON-33-LACA	38.06389	-77.84917	VAN-F08L	Contrary Creek Upstream	X	X	X	X
8CON-5-LACA	38.06167	-77.83306	VAN-F08L	Contrary Creek Arm of Lake Anna	X	X	X	X
8ELK-32-LACA	38.03167	-77.78028	VAN-F07L	ELKCRK	X	X	X	X
8FRC-34-LACA	38.05389	-77.84194	VAN-F08L	Freshwater Creek (Upstream Tributary of Contrary Creek)	X	X	X	X
8GMC-13-LACA	38.11194	-77.94222	VAN-F06L	Gold Mine Creek off of Thalia Shores		X	X	X
8GMC-13OLD-LACA	38.11111	-77.94306	VAN-F06L	Gold Mine Creek arm of Lake Anna				
8MLN-31-LACA	38.02056	-77.77472	VAN-F07L	MILLPND	X	X	X	X
8NAR-12-LACA	38.11194	-77.88639	VAN-F06L	North Anna River arm of Lake Anna	X	X	X	X
8NAR-12OLD-LACA	38.11556	-77.91389	VAN-F06L	North Anna River arm of Lake Anna				
8NAR-13A-LACA	38.04917	-77.75139	VAN-F07L	Main Lake	X	X		
8NAR-1-LACA	38.01583	-77.71611	VAN-F07L	Main lake - 100 yds from dam	X	X	X	X
8NAR-2-LACA	38.03194	-77.73750	VAN-F07L	Main Lake near River Bend Island RVRBND	X	X	X	X
8NAR-35A-LACA	38.11944	-77.95417	VAN-F06L	North Anna upstream	X	X	X	X
8NAR-35B-LACA	38.11944	-77.94583	VAN-F06L	North Anna upstream	X	X	X	X
8NAR-3-LACA	38.05361	-77.76556	VAN-F07L	Main Lake near Smith's Point		X	X	X
8NAR-4-LACA	38.06972	-77.78750	VAN-F07L	Main Lake N. of Power Plant BOGGSPT	X	X	X	X
8NAR-6-LACA	38.08611	-77.81528	VAN-F07L	Lake Anna North of Rt. 208 Bridge BLOUNTWTF	X	X	X	X
8NAR-6OLD-LACA	38.08889	-77.81917	VAN-F07L	Lake Anna North of Rt. 208 Bridge BLOUNTWTF				
8PGN-7A-LACA	38.09139	-77.81944	VAN-F07L	Pigeon Run Arm of Lake Anna Across from State Park	X	X	X	X
8PGN-7B-LACA	38.09611	-77.81444	VAN-F07L	Pigeon Run arm of Lake Anna across from State Park	X	X	X	X
8PLT-36-LACA	38.14361	-77.85556	VAN-F07L	Plentiful Creek upstream	X	X	X	X
8PLT-9-LACA	38.13222	-77.85750	VAN-F07L	Plentiful Creek arm of Lake Anna	X	X	X	X
8PMC-11-LACA	38.13806	-77.89500	VAN-F07L	Pamunkey Creek arm of Lake Anna	X	X	X	X
8PMC-38-LACA	38.14167	-77.93167	VAN-F07L	Pamunkey Creek upstream	X	X	X	X
8PMC-8-LACA	38.10778	-77.83833	VAN-F07L	Pamunkey Creek arm of Lake Anna north of the splits	X	X	X	X
8RCK-30-LACA	37.99417	-77.75417	VAN-F07L	ROCKCRK	X	X	X	X
8TRY-10-LACA	38.14833	-77.89278	VAN-F07L	Terry's Run arm of Lake Anna	X	X	X	X
8TRY-37-LACA	38.16889	-77.91611	VAN-F07L	Terry's Run upstream	X	X	X	X

LACA Data Analyzed

Station Number	Major River Basin	Stream Name	Latitude	Longitude	# WATER TEMP (measurements taken at different depths counted as individual observations)	# WATER TEMP Violations (>32 C)
1	York	Main lake - 100 yds from dam	38.01583	-77.71611	5	0
2	York	Main Lake near River Bend Island RVRBND	38.03194	-77.7375	13	0
3	York	Main Lake near Smith's Point	38.05361	-77.76556	5	0
4	York	Main Lake N. of Power Plant BOGGSPT	38.06972	-77.7875	8	0
5	York	Contrary Creek arm of Lake Anna	38.06167	-77.83306	13	0
6 old	York	Lake Anna North of Rt. 208 Bridge BLOUNTWTF	38.08889	-77.81917	7	0
6	York	Lake Anna North of Rt. 208 Bridge BLOUNTWTF	38.08611	-77.81528	5	0
7	York	Pigeon Run arm of Lake Anna across from State Park	38.09139	-77.81944	7	0
7	York	Pigeon Run arm of Lake Anna across from State Park	38.09611	-77.81444	5	0
8	York	Pamunkey Creek arm of Lake Anna north of the splits	38.10778	-77.83833	12	0
9	York	Plentiful Creek arm of Lake Anna	38.13222	-77.8575	12	0
10	York	Terry's Run arm of Lake Anna	38.14833	-77.89278	13	0
11	York	Pamunkey Creek arm of Lake Anna	38.13806	-77.895	12	0
12 old	York	North Anna River arm of Lake Anna	38.11556	-77.91389	8	0
12	York	North Anna River arm of Lake Anna	38.11194	-77.88639	6	0
13 old	York	Gold Mine Creek arm of Lake Anna	38.11111	-77.94306	3	0
13	York	Gold Mine Creek off of Thalia Shores	38.11194	-77.94222	5	0
30	York	ROCKCRK	37.99417	-77.75417	12	4
31	York	MILLPND	38.02056	-77.77472	12	3
32	York	ELKCRK	38.03167	-77.78028	12	2
33	York	Contrary Creek upstream	38.06389	-77.84917	9	0
34	York	Freshwater Creek (upstream tributary of Contrary Creek)	38.05389	-77.84194	10	0
35A	York	North Anna upstream	38.11944	-77.95417	7	0
35B	York	North Anna upstream	38.11944	-77.94583	1	0
36	York	Plentiful Creek upstream	38.14361	-77.85556	12	0
37	York	Terry's Run upstream	38.16889	-77.91611	6	0
38	York	Pamunkey Creek upstream	38.14167	-77.93167	5	0
13A	York	Main Lake	38.04917	-77.75139	0	

min Water Temp	Max Water Temp	# DO Observations (measurements taken at different depths counted as individual observations)	# DO Violations (<5.0 mg/L)	Min DO	Max DO	# pH Observations (measurements taken at different depths counted as individual observations)	# pH Violations (<6.0, >9.0 SU)	Min pH	Max pH
17	30.5	8	0	5.7	9.5	7	0	6.5	7.6
12	31	14	0	5.25	9.85	13	0	6.5	7.5
16	28	6	0	7.5	8.05	5	0	6.5	7
14	29.1	10	0	5.7	10.6	8	0	6	7.5
9	29.78	15	0	7.29	11.5	14	0	6.3	7.63
14	28.5	7	0	6.6	9.75	7	0	6.8	7.5
16	30.04	7	0	7.7	10	6	0	6.99	7.4
8	29	6	0	7.5	10.75	7	0	6.6	7.2
17	30.04	7	0	7.67	9.9	6	0	6.98	7.5
9	29	13	0	7.6	11.13	13	0	7	7.52
9	29.5	13	0	7.05	11.61	13	0	7	8.4
10	28.5	15	0	7.1	11.95	14	0	7	8.6
9.5	28.75	13	0	6.45	13.94	13	1	7	9.14
8.5	30	8	0	5.7	11.6	9	0	7	7.5
17	30	8	0	6.2	10.7	7	0	6.5	7.8
26	29	3	2	4.35	8	3	0	7.4	8
15	29.52	5	0	7.8	10.9	6	0	6.4	8.61
14	34	13	0	6	23.5	12	0	7	7
14	36	13	1	4.5	9.3	11	0	7	7
13.5	34.5	13	0	6.4	10.2	12	0	7	7
16.3	29.75	9	0	5.5	9.8	10	2	4.8	7
11	29	11	0	6.5	10	11	0	6	7
9.75	28.5	7	3	3.75	8.3	7	0	6.5	8
17	17	1	0	9.4	9.4	1	0	7	7
9	29	11	0	6.1	10	11	0	6.5	7
14.5	27.5	5	0	8	9.6	6	0	6.8	7
14	27	6	0	5.6	10.75	6	0	6.5	8
		3	0	7.4	10.5	3	0	6	7

# Total Phos Observations	# TP Violations (lake or stream screening value used) (>0.1 mg/L)	Min TP (mg/l)	Max TP (mg/l)	# Fecal Coliform Observations	# Fecal Coliform Violations (>400)	Min Fecal Coliforms (MPN/100mL)	MaxFecal Coliforms (MPN/100mL)
6	0	0.01	0.01	2	0	1	100
13	0	0.01	0.023	10	0	1	100
5	0	0.01	0.03	2	0	1	4
9	2	0.01	0.188	5	0	1	100
13	0	0.01	0.032	8	0	2	23
6	0	0.01	0.039	7	0	2	7
5	0	0.01	0.03	1	0	70	70
7	0	0.01	0.06	7	0	2	50
5	0	0.01	0.02	1	0	10	10
13	0	0.01	0.081	9	0	1	9
13	0	0.01	0.053	9	0	1	4
14	1	0.01	0.153	9	0	2	9
12	2	0.01	0.6	8	0	8	240
9	0	0.013	0.083	8	0	2	110
7	0	0.02	0.07	2	0	1	10
3	3	0.13	0.274	3	0	2	7
5	1	0.02	0.13	1	0	10	10
13	0	0.01	0.02	9	0	1	23
14	0	0.01	0.097	8	0		23
14	1	0.01	0.144	8	0	2	50
9	0	0.01	0.069	6	0	1	110
11	0	0.01	0.092	7	0	2	23
7	7	0.116	0.362	7	1	2	1600
1	0	0.03	0.03	1	0	1	1
12	1	0.02	0.109	8	1	2	500
6	1	0.03	0.162	2	0	17	150
6	2	0.03	0.125	2	0	43	49
4	0	0.016	0.069	0	0	0	0

# E. coli Observations	# E. Coli Violations (>235 CFU per 100 ml)	Min E. coli (CFU/100 ml)	Max E. coli (CFU/100 ml)	
4	0	25	25	
4	0	25	25	
4	0	25	25	
4	0	25	125	
4	0	25	60	
0	0	0	0	
4	0	10	25	
0	0	0	0	
4	0	20	25	
4	0	25	25	
4	0	25	75	
5	0	25	150	
4	1	25	875	
0	0	0	0	
5	2	25	300	
0	0	0	0	
4	1	25	800	
4	0	25	25	
4	0	25	25	
4	0	25	25	
4	0	25	175	
4	0	25	125	
0	0	0	0	
0	0	0	0	
4	1	25	1775	
4	1	25	250	
4	1	25	400	
0	0	0	0	

LACA / DEQ Data

LAKE ANNA CIVIC ASSOCIATION WATER QUALITY MONITORING PROJECT REPORT Master Data File 2001-2004

Major River Basin	Stream Name	Latitude	Longitude	Station Number	DEQ Station ID	MONITOR DATE	DEPTH OF SITE (m)	SECCHI DEPTH (m)	AIR TEMP (C)	WATER TEMP 0.3m (C)
York	Main lake - 100 yds from dam	38.01583	-77.71611	1	8NAR-1-LACA	8/22/2001	4.0	2.75	22	
York	8-NAR034.92 (DEQ) Main Lake near the dam	38.01583	-77.71611	1	8-NAR034.92	4/23/2002				
York	8-NAR034.92 (DEQ) Main Lake near the dam	38.01583	-77.71611	1	8-NAR034.92	6/26/2002				
York	8-NAR034.92 (DEQ) Main Lake near the dam	38.01583	-77.71611	1	8-NAR034.92	8/21/2002				
York	8-NAR034.92 (DEQ) Main Lake near the dam	38.01583	-77.71611	1	8-NAR034.92	10/16/2002				
York	8-NAR034.92 Main Lake near the dam	38.01583	-77.71611	1	8-NAR034.92	4/28/2003	19.5	2.75	15	
York	8-NAR034.92 Main Lake near the dam	38.01583	-77.71611	1	8-NAR034.92	6/16/2003	21.9	2.1	22.5	
York	8-NAR034.92 Main Lake near the dam	38.01583	-77.71611	1	8-NAR034.92	8/19/2003	22.5	2.5	25	
York	8-NAR034.92 Main Lake near the dam	38.01583	-77.71611	1	8-NAR034.92	10/20/2003	22.5	2.1	11.5	21
York	Main Lake near the dam	38.01583	-77.71611	1	8-NAR034.92	4/20/2004	23.7	3	23.5	17.5
York	Main lake south of River Bend Island	38.03194	-77.73750	2	8NAR-2-LACA	3/15/2001	21.0	3	11	
York	Main lake south of River Bend Island	38.03194	-77.73750	2	8NAR-2-LACA	5/30/2001	21.3	2.25	18	
York	Main lake south of River Bend Island	38.03194	-77.73750	2	8NAR-2-LACA	8/22/2001	21.3	3	27	
York	Main lake south of River Bend Island	38.03194	-77.73750	2	8NAR-2-LACA	12/5/2001	18.29	3.1	12	
York	Main lake south of River Bend Island	38.03194	-77.73750	2	8NAR-2-LACA	4/23/2002	21.336	2.75	7.5	
York	Main lake south of River Bend Island	38.03194	-77.73750	2	8NAR-2-LACA	6/26/2002	17.7	2.25	27	
York	8-NAR037.22 Main Lake near River Bend Island RVRBND	38.03194	-77.73750	2	8-NAR037.22	6/26/2002				
York	Main lake south of River Bend Island	38.03194	-77.73750	2	8NAR-2-LACA	8/21/2002	19.2024	1.85	25	
York	8-NAR037.22 Main Lake near River Bend Island RVRBND	38.03194	-77.73750	2	8-NAR037.22	8/21/2002				
York	Main lake south of River Bend Island	38.03194	-77.73750	2	8NAR-2-LACA	10/16/2002	18.8976	1.8	15	
York	8-NAR037.22 Main Lake near River Bend Island RVRBND	38.03194	-77.73750	2	8-NAR037.22	4/28/2003	17.5	2.85	17	
York	8-NAR037.22 Main Lake near River Bend Island RVRBND	38.03194	-77.73750	2	8-NAR037.22	6/16/2003	13.3	2.1	24.5	
York	8-NAR037.22 Main Lake near River Bend Island RVRBND	38.03194	-77.73750	2	8-NAR037.22	8/19/2003	17.6	2.4	25	
York	8-NAR037.22 Main Lake near River Bend Island RVRBND	38.03194	-77.73750	2	8-NAR037.22	10/20/2003	19	2.6		22
York	Main Lake near River Bend Island RVRBND	38.03194	-77.73750	2	8-NAR037.22	4/20/2004	26	2.8	22.5	16
York	8-NAR043.00 (DEQ) Main Lake near Smith's Point	38.05361	-77.76556	3	8-NAR043.00	4/23/2002				
York	8-NAR043.00 (DEQ) Main Lake near Smith's Point	38.05361	-77.76556	3	8-NAR043.00	6/26/2002				
York	8-NAR043.00 (DEQ) Main Lake near Smith's Point	38.05361	-77.76556	3	8-NAR043.00	8/21/2002				
York	8-NAR043.00 (DEQ) Main Lake near Smith's Point	38.05361	-77.76556	3	8-NAR043.00	10/16/2002				
York	8-NAR043.00 Main Lake near Smith's Point	38.05361	-77.76556	3	8-NAR043.00	4/28/2003	15.7	2.25	15	
York	8-NAR043.00 Main Lake near Smith's Point	38.05361	-77.76556	3	8-NAR043.00	6/16/2003	16.5	2.35	24	
York	8-NAR043.00 Main Lake near Smith's Point	38.05361	-77.76556	3	8-NAR043.00	8/19/2003	12	2.9	27	
York	8-NAR043.00 Main Lake near Smith's Point	38.05361	-77.76556	3	8-NAR043.00	10/20/2003	16.2	2.7	12	20
York	Main Lake near Smith's Point	38.05361	-77.76556	3	8-NAR043.00	4/20/2004	53	2.85	26	16
York	Main lake north of power plant BOGGSPT	38.06972	-77.78750	4	8-NAR044.68	3/15/2001	14.9	3		
York	Main lake north of power plant BOGGSPT	38.06972	-77.78750	4	8-NAR044.68	5/30/2001	14.3	3	18	
York	Main lake north of power plant BOGGSPT	38.06972	-77.78750	4	8-NAR044.68	8/22/2001	12.8	3.5	30	
York	Main lake north of power plant BOGGSPT	38.06972	-77.78750	4	8-NAR044.68	12/5/2001	12.80	4	15	
York	8-NAR044.68 (DEQ) Main Lake N. of Power Plant BOGGSPT	38.06972	-77.78750	4	8-NAR044.68	4/23/2002				
York	8-NAR044.68 (DEQ) Main Lake N. of Power Plant BOGGSPT	38.06972	-77.78750	4	8-NAR044.68	6/26/2002				
York	8-NAR044.68 (DEQ) Main Lake N. of Power Plant BOGGSPT	38.06972	-77.78750	4	8-NAR044.68	8/21/2002				
York	8-NAR044.68 (DEQ)Main Lake N. of Power Plant BOGGSPT	38.06972	-77.78750	4	8-NAR044.68	10/16/2002				
York	8-NAR044.68 (DEQ) Main Lake N. of Power Plant BOGGSPT	38.07028	-77.76556	4	8-NAR044.68	10/16/2002				
York	8-NAR044.68 Main Lake N. of Power Plant BOGGSPT	38.06972	-77.78750	4	8-NAR044.68	4/28/2003	3.96	2	17	
York	8-NAR044.68 Main Lake N. of Power Plant BOGGSPT	38.06972	-77.78750	4	8-NAR044.68	6/16/2003	4.3	2	23	
York	8-NAR044.68 Main Lake N. of Power Plant BOGGSPT	38.06972	-77.78750	4	8-NAR044.68	8/19/2003	4.3	1.85	25	
York	8-NAR044.68 Main Lake N. of Power Plant BOGGSPT	38.06972	-77.78750	4	8-NAR044.68	10/20/2003	5.5	2	11	18.8
York	Main Lake N. of Power Plant BOGGSPT	38.06972	-77.78750	4	8-NAR044.68	4/20/2004	13.7	2.5	22	17
York	Contrary Creek arm of Lake Anna	38.06167	-77.83306	5	8CON-5-LACA	3/15/2001	6.0	1.75	8.5	
York	Contrary Creek arm of Lake Anna	38.06167	-77.83306	5	8CON-5-LACA	5/30/2001	6.2	1.5	22	
York	Contrary Creek arm of Lake Anna	38.06167	-77.83306	5	8CON-5-LACA	8/22/2001	6.1	1.5	23	
York	Contrary Creek arm of Lake Anna	38.06167	-77.83306	5	8CON-5-LACA	12/5/2001	6.55	1.75	13	
York	Contrary Creek arm of Lake Anna	38.06167	-77.83306	5	8CON-5-LACA	4/23/2002	5.334	1	7	
York	Contrary Creek arm of Lake Anna	38.06167	-77.83306	5	8CON-5-LACA	6/26/2002	5.5	1.65	27.75	
York	Contrary Creek arm of Lake Anna	38.06167	-77.83306	5	8CON-5-LACA	8/21/2002	4.2	1.5	25	
York	Contrary Creek arm of Lake Anna	38.06167	-77.83306	5	8CON-5-LACA	10/16/2002	17.2	1.3	14	
York	Contrary Creek arm of Lake Anna (DEQ)	38.06167	-77.83306	5	8-CON002.32	4/28/2003				
York	Contrary Creek arm of Lake Anna (DEQ)	38.06167	-77.83306	5	8-CON002.32	6/16/2003		1.2		
York	Contrary Creek arm of Lake Anna (DEQ)	38.06167	-77.83306	5	8-CON002.32	8/19/2003				
York	Contrary Creek arm of Lake Anna (DEQ)	38.06167	-77.83306	5	8-CON002.32	10/20/2003				18.99

WATER TEMP Secchi depth (C)	DO 0.3m (mg/l)	DO 2.0m (mg/l)	DO Secchi depth (mg/l)	pH 0.3m	pH 2.0m	PHOS 0.3 m Qualifier	PHOS 0.3m (mg/L)	Phos Secchi Depth Qualifier	PHOS Secchi depth (mg/L)	FECOL Qualifier	FECOL 2.0m (MPN/100 ml)	E. coli Qualitifer	E. Coli cfu/100ml	COMMENT	QUALITY CONTROL
			7		7			<	0.01						
			6.6		7.6						100			DEQ MONITORED DEQ MONITORED DEQ MONITORED DEQ MONITORED	
17			8.8		6.5				0.01		1				
25					7				0.01			<	25		
30.5			5.7		7				0.01			<	25		
	7.3	7.3		7			0.01					<	25		
	9.15	9.5		7			0.01					<	25		
12			9.85		7				0.02		8				
22			6.2		7				0.023		4				
29.5			6		6.9				0.011	<	2				
14			8.4		7			<	0.010		50				
18.5			8.7		7.5			<	0.010	<	2				
28			6.2		6.8				0.016	<	2				
											100			DEQ MONITORED	
31			6.5		7			<	0.01	<	2				
														DEQ MONITORED	
22			7.8		7				0.013		4				
17.5			9.1		6.9				0.01	<	1				
24.5					6.5				0.01				25		
29			5.25		6.5				0.01			<	25		
	7.5	7.4		7			0.01						25		
	8.5	8.5		7			0.01					<	25		
														DEQ MONITORED DEQ MONITORED DEQ MONITORED DEQ MONITORED	
16			8.05		7				0.01	<	4 1				
25					7				0.01			<	25		
28			7.5		6.5				0.01			<	25		
	7.7	7.7		7			0.01					<	25		
	7.6	7.7		7			0.03					<	25		
			10.6		7				0.188	<	2			TEMP NOT COLLECTED	
21			8.5						0.032		4				
27.3			6.85		7.5				0.016						
14			9.5		7				0.141		4				
											100			DEQ MONITORED DEQ MONITORED DEQ MONITORED DEQ MONITORED DEQ MONITORED	
16			9.7		7				0.01		1				
25.5					7				0.01				125		
29.1			5.7		7				0.01			<	25		
	7.2	7.5		6			0.02					<	25		
	9.3	9.2		7			0.02					<	25		
9			11.5		6.5				0.027	<	2				
20			9.5		7			<	0.01		8				
28			11.5		7				0.03	<	2				
12.75			9.2		6.5			<	0.010		23				
18.5			8.3		6.3			<	0.010						
29.25			7.9		7				0.02	<	2				
29			7.85		7			<	0.01		4				
18			8.8		7				0.032		4				
17.5			10.2		7.1				0.01		10			DEQ MONITORED	
26			8.2		7.3				0.01				60	DEQ MONITORED	E.coli<25 on 7/1/03
29.78			7.29		7.55				0.02				25	DEQ MONITORED	
	8.73	8.3		7.63	7.13		0.01						25	DEQ MONITORED	

LAKE ANNA CIVIC ASSOCIATION WATER QUALITY MONITORING PROJECT REPORT Master Data File 2001-2004

Major River Basin	Stream Name	Latitude	Longitude	Station Number	DEQ Station ID	MONITOR DATE	DEPTH OF SITE (m)	SECCHI DEPTH (m)	AIR TEMP (C)	WATER TEMP 0.3m (C)
York	Contrary Creek arm of Lake Anna	38.06167	-77.83306	5	8CON-5-LACA	4/20/2004	6	1	24	17
York	Lake Anna North of Rt. 208 Bridge BLOUNTWTF	38.08889	-77.81917	6	8NAR-6-LACA	5/30/2001	12.2	3	26	
York	Lake Anna North of Rt. 208 Bridge BLOUNTWTF	38.08889	-77.81917	6	8NAR-6-LACA	8/22/2001	11.9	2.5	27.5	
York	Lake Anna North of Rt. 208 Bridge BLOUNTWTF	38.08889	-77.81917	6	8NAR-6-LACA	12/5/2001	11.89	2.25	15	
York	Lake Anna North of Rt. 208 Bridge BLOUNTWTF	38.08889	-77.81917	6	8NAR-6-LACA	4/23/2002	12.192	2.5	9	
York	Lake Anna North of Rt. 208 Bridge BLOUNTWTF	38.08889	-77.81917	6	8NAR-6-LACA	6/26/2002	14.3256	2.5	29.5	
York	Lake Anna North of Rt. 208 Bridge BLOUNTWTF	38.08889	-77.81917	6	8NAR-6-LACA	8/21/2002	9.144	1.8	26.5	
York	Lake Anna North of Rt. 208 Bridge BLOUNTWTF	38.08889	-77.81917	6	8NAR-6-LACA	10/16/2002	13.7	1.1	13.5	
York	BLOUNTWTF (DEQ)	38.08611	-77.81528	6	8-NAR047.69	4/28/2003		1.4		
York	BLOUNTWTF (DEQ)	38.08611	-77.81528	6	8-NAR047.69	6/16/2003				
York	BLOUNTWTF (DEQ)	38.08611	-77.81528	6	8-NAR047.69	8/19/2003				
York	BLOUNTWTF (DEQ)	38.08611	-77.81528	6	8-NAR047.69	10/20/2003				19.76
York	Lake Anna North of Rt. 208 Bridge BLOUNTWTF	38.08611	-77.81528	6	8NAR-6-LACA	4/20/2004	8.5	1.7	24	16
York	Pigeon Run arm of Lake Anna across from State Park	38.09139	-77.81944	7	8PGN-7-LACA	3/15/2001	4.8	2.25	13	
York	Pigeon Run arm of Lake Anna across from State Park	38.09139	-77.81944	7	8PGN-7-LACA	5/30/2001	4.3	2	16.5	
York	Pigeon Run arm of Lake Anna across from State Park	38.09139	-77.81944	7	8PGN-7-LACA	8/22/2001	7.9	1.8	22.8	
York	Pigeon Run arm of Lake Anna across from State Park	38.09139	-77.81944	7	8PGN-7-LACA	12/5/2001	7.00	3.5	16.2	
York	Pigeon Run arm of Lake Anna across from State Park	38.09139	-77.81944	7	8PGN-7-LACA	4/23/2002	10.3632	4	10.9	
York	Pigeon Run arm of Lake Anna across from State Park	38.09139	-77.81944	7	8PGN-7-LACA	6/26/2002	10.2	2.4	28.75	
York	Pigeon Run arm of Lake Anna across from State Park	38.09139	-77.81944	7	8PGN-7-LACA	8/21/2002	8.3	1.7	26	
York	Pigeon Run arm of Lake Anna across from State Park	38.09139	-77.81944	7	8PGN-7-LACA	10/16/2002				
York	Pigeon Run arm of Lake Anna across from State Park (DEQ)	38.09611	-77.81444	7	7-PGN000.34	4/28/2003		1.3		
York	Pigeon Run arm of Lake Anna across from State Park (DEQ)	38.09611	-77.81444	7	7-PGN000.34	6/16/2003				
York	Pigeon Run arm of Lake Anna across from State Park (DEQ)	38.09611	-77.81444	7	7-PGN000.34	8/19/2003				
York	Pigeon Run arm of Lake Anna across from State Park (DEQ)	38.09611	-77.81444	7	7-PGN000.34	10/20/2003				19.43
York	Pigeon Run arm of Lake Anna across from State Park	38.09611	-77.81444	7	8PGN-7-LACA	4/20/2004	8.3	1.7	22.5	17
York	Pamunkey Creek arm of Lake Anna north of the splits	38.10778	-77.83833	8	8PMC-8-LACA	3/15/2001	10.5	1.5	15	
York	Pamunkey Creek arm of Lake Anna north of the splits	38.10778	-77.83833	8	8PMC-8-LACA	5/30/2001	11.0	5.5	18	
York	Pamunkey Creek arm of Lake Anna north of the splits	38.10778	-77.83833	8	8PMC-8-LACA	8/22/2001	11.0	1.75	24.5	
York	Pamunkey Creek arm of Lake Anna north of the splits	38.10778	-77.83833	8	8PMC-8-LACA	12/5/2001	13.72	2.3	14	
York	Pamunkey Creek arm of Lake Anna north of the splits	38.10778	-77.83833	8	8PMC-8-LACA	4/23/2002	10.6	2.2	9.5	
York	Pamunkey Creek arm of Lake Anna north of the splits	38.10778	-77.83833	8	8PMC-8-LACA	6/26/2002	10.4	2.55	32.5	
York	Pamunkey Creek arm of Lake Anna north of the splits	38.10778	-77.83833	8	8PMC-8-LACA	8/21/2002	9.5	1.55	25.5	
York	Pamunkey Creek arm of Lake Anna north of the splits	38.10778	-77.83833	8	8PMC-8-LACA	10/16/2002	10.1	1.1	13.5	
York	Pamunkey Creek arm of Lake Anna north of the splits	38.10778	-77.83833	8	8PMC-8-LACA	4/28/2003	11.6	1.35	17	
York	Pamunkey Creek arm of Lake Anna north of the splits	38.10778	-77.83833	8	8PMC-8-LACA	6/16/2003	11.0	1.9	18	
York	Pamunkey Creek arm of Lake Anna north of the splits	38.10778	-77.83833	8	8PMC-8-LACA	8/19/2003	11	2.2	24	
York	Pamunkey Creek arm of Lake Anna north of the splits	38.10778	-77.83833	8	8PMC-8-LACA	10/20/2003	10.7	1	12	18
York	Pamunkey Creek arm of Lake Anna north of the splits (DEQ)	38.10778	-77.83833	8	8-PMC000.20	4/19/2004		1.1		16
York	Plentiful Creek arm of Lake Anna	38.13222	-77.85750	9	8PLT-9-LACA	3/15/2001	7.0	2	8	
York	Plentiful Creek arm of Lake Anna	38.13222	-77.85750	9	8PLT-9-LACA	5/30/2001	6.5	2	16	
York	Plentiful Creek arm of Lake Anna	38.13222	-77.85750	9	8PLT-9-LACA	8/22/2001	7.5	1.25	19	
York	Plentiful Creek arm of Lake Anna	38.13222	-77.85750	9	8PLT-9-LACA	12/5/2001	6.40	1.75	10	
York	Plentiful Creek arm of Lake Anna	38.13222	-77.85750	9	8PLT-9-LACA	4/23/2002	8	2	9	
York	Plentiful Creek arm of Lake Anna	38.13222	-77.85750	9	8PLT-9-LACA	6/26/2002	7	2.6	28.5	
York	Plentiful Creek arm of Lake Anna	38.13222	-77.85750	9	8PLT-9-LACA	8/21/2002	not reported	1.5	30	
York	Plentiful Creek arm of Lake Anna	38.13222	-77.85750	9	8PLT-9-LACA	10/16/2002	6	1	16	
York	Plentiful Creek arm of Lake Anna	38.13222	-77.85750	9	8PLT-9-LACA	4/28/2003	7.3	1.5	20	
York	Plentiful Creek arm of Lake Anna	38.13222	-77.85750	9	8PLT-9-LACA	6/16/2003	11.0	1.8	27	
York	Plentiful Creek arm of Lake Anna	38.13222	-77.85750	9	8PLT-9-LACA	8/19/2003	7.5	1.95	24	
York	Plentiful Creek arm of Lake Anna	38.13222	-77.85750	9	8PLT-9-LACA	10/20/2003	7.5	1.05	9.5	17
York	Plentiful Creek arm of Lake Anna (DEQ)	38.13222	-77.85750	9	8-PLT000.31	4/19/2004		0.9		17.9
York	Terry's Run arm of Lake Anna	38.14833	-77.89278	10	8TRY-10-LACA	3/15/2001	4.1	1	7	
York	Terry's Run arm of Lake Anna	38.14833	-77.89278	10	8TRY-10-LACA	5/30/2001	4.3	1	17	
York	Terry's Run arm of Lake Anna	38.14833	-77.89278	10	8TRY-10-LACA	8/22/2001	5.5	1.1	24	
York	Terry's Run arm of Lake Anna	38.14833	-77.89278	10	8TRY-10-LACA	12/5/2001	3.60	1	11.6	
York	Terry's Run arm of Lake Anna	38.14833	-77.89278	10	8TRY-10-LACA	4/23/2002	4.2672	0.7	8.7	
York	Terry's Run arm of Lake Anna	38.14833	-77.89278	10	8TRY-10-LACA	6/26/2002	3.3	1.3	27.6	
York	Terry's Run arm of Lake Anna	38.14833	-77.89278	10	8TRY-10-LACA	8/21/2002	3.8	0.4	25.2	
York	Terry's Run arm of Lake Anna	38.14833	-77.89278	10	8TRY-10-LACA	10/16/2002	3.7	0.7	10.5	

WATER TEMP Secchi depth (C)	DO 0.3m (mg/l)	DO 2.0m (mg/l)	DO Secchi depth (mg/l)	pH 0.3m	pH 2.0m	PHOS 0.3 m Qualifier	PHOS 0.3m (mg/L)	Phos Secchi Depth Qualifier	PHOS Secchi depth (mg/L)	FECOL Qualifier	FECOL 2.0m (MPN/100 ml)	E. coli Qualitifer	E. Coli cfu/100ml	COMMENT	QUALITY CONTROL
	9.1	9.4		6.5			0.01					<	25		
28			8.8		7				0.016	<	2				
20			7.75		7					<	2			Lost TP bottle	
14			9.75		7.5			<	0.010		4				
17			8.5		7			<	0.010		7				
27.75			7.75		7.2				0.027	<	2				
28.5			7.9		6.8			<	0.01	<	2				
19			6.6		7				0.039	<	2				
17.2			9.6		7.4				0.03		70			DEQ MONITORED	
26			8.1		7.2				0.01				10	DEQ MONITORED	
30.04			7.78		7.24				0.01				25	DEQ MONITORED	
	8.25	7.7		7.1	6.99		0.01						25	DEQ MONITORED	
	9.7	10		7			0.01					<	25		
8			7.5		6.8				0.06	<	2				
20.5			9.1		6.6				0.027		4				
28.1					7				0.027		4			missed step in DO procedure	
13.4			10.75		7				0.011	<	2				
16.4			8.4		7			<	0.010		50				
28.75			7.95		7			<	0.01		4				
29			7.5		7.2				0.011		4				
														Not Monitored	
18			9.8		7.5				0.02		10			DEQ MONITORED	
26			7.9		7.2				0.02				20	DEQ MONITORED	
30.04			7.8		7.4				0.01				25	DEQ MONITORED	
	8.3	7.67		7.07	6.98		0.01						25	DEQ MONITORED	
	9.6	9.9		7			0.01						25		
9			9.65		7			<	0.01	<	2				
20			9.5		7			<	0.01	<	2				
28			7.9		7			<	0.01	<	2				
14			9.75		7			<	0.010		4				
18.5			9.05		7			<	0.010		9				
28.75			8		7				0.078		4				
29			7.6		7			<	0.01	<	2				Blank TP <.01
					7				0.081		4				TP <.01 Blank
17			8.15		7				0.03		1				
25					7				0.01				25		
28.5			7.6		7				0.02			<	25		
	7.6	7.6		7			0.02					<	25		
	11.1	11.13		7.52			0.01						25	DEQ MONITORED	
9			11.5		7				0.048	<	2				
22			9.75		7			<	0.01		4				
28			7.75		7				0.039		4				
14			10		7			<	0.010		4				
19			9.5		7				0.018	<	2				
29			8		7				0.018	<	2				
25.8			7.8		7.5			<	0.01	<	2				Blank FC <2
					7				0.053	<	2				
16			8.5		7				0.05		1				
29.5					7				0.02				75		E.coli<25 on 7/1/03
29			7.05		7				0.01			<	25		
	7.7	7.5		7			0.02					<	25		
	11.57	11.61		8.4			0.01						25	DEQ MONITORED	
10			11.9		7				0.057		4				
21			9.05		7				0.05		8				
27.65			7.1		7				0.03	<	2				
12.3			10.25		7			<	0.010		4				
18.7			7.6		7				0.05		9				
28.4			8.6		8				0.048		4				
28.4			7.2		8				0.095		4			Low water; deeper reading NA	
					7				0.153		4				

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Major River Basin	Stream Name	Latitude	Longitude	Station Number	DEQ Station ID	MONITOR DATE	DEPTH OF SITE (m)	SECCHI DEPTH (m)	AIR TEMP (C)	WATER TEMP 0.3m (C)
York	Terry's Run arm of Lake Anna	38.14833	-77.89278	10	8TRY-10-LACA	4/28/2003	5.2	1	16.9	
York	Terry's Run arm of Lake Anna	38.14833	-77.89278	10	8TRY-10-LACA	6/16/2003	5.1	0.8	22.4	
York	Terry's Run arm of Lake Anna	38.14833	-77.89278	10	8TRY-10-LACA	8/19/2003	5.2	0.8	23	
York	Terry's Run arm of Lake Anna	38.14833	-77.89278	10	8TRY-10-LACA	10/20/2003	5.2	0.8	9.5	16.3
York	Terry's Run arm of Lake Anna	38.14833	-77.89278	10	8TRY-10-LACA	4/19/2004		0.6		18.63
York	Terry's Run arm of Lake Anna (DEQ)	38.14833	-77.89278	10	8-TRY001.39	4/20/2004	5.2	0.75	21	17
York	Pamunkey Creek arm of Lake Anna	38.13806	-77.89500	11		3/15/2001	4.3	0.9	10	
York	Pamunkey Creek arm of Lake Anna	38.13806	-77.89500	11		5/30/2001	4.4	0.75	18	
York	Pamunkey Creek arm of Lake Anna	38.13806	-77.89500	11		8/22/2001	3.0	0.75	31.5	
York	Pamunkey Creek arm of Lake Anna	38.13806	-77.89500	11		12/5/2001	5.18	1	12	
York	Pamunkey Creek arm of Lake Anna	38.13806	-77.89500	11		4/23/2002	3.7	0.7	8	
York	Pamunkey Creek arm of Lake Anna	38.13806	-77.89500	11		6/26/2002	3.5	1	27.25	
York	Pamunkey Creek arm of Lake Anna	38.13806	-77.89500	11		8/21/2002	3	0.4	25	
York	Pamunkey Creek arm of Lake Anna	38.13806	-77.89500	11		10/16/2002	2.9	0.6	16	
York	Pamunkey Creek arm of Lake Anna	38.13889	-77.89500	11	8-PMC007.15	4/28/2003	5	1.3	17.5	
York	Pamunkey Creek arm of Lake Anna	38.13889	-77.89500	11	8-PMC007.15	6/16/2003	5.5	0.6	21.5	
York	Pamunkey Creek arm of Lake Anna	38.13889	-77.89500	11	8-PMC007.15	8/19/2003	5.5	0.8	26.5	
York	Pamunkey Creek arm of Lake Anna	38.13889	-77.89500	11	8-PMC007.15	10/20/2003	5.1	0.8	9	17
York	Pamunkey Creek arm of Lake Anna (DEQ)	38.13889	-77.89500	11	8-PMC007.15	4/19/2004		0.5		17.54
York	North Anna River arm of Lake Anna	38.11556	-77.91389	12	8NAR-12-LACA	3/15/2001	10.1	1.25	8	
York	North Anna River arm of Lake Anna	38.11556	-77.91389	12	8NAR-12-LACA	5/30/2001	6.0	1	18	
York	North Anna River arm of Lake Anna	38.11556	-77.91389	12	8NAR-12-LACA	8/22/2001	7.4	1	24	
York	North Anna River arm of Lake Anna	38.11556	-77.91389	12	8NAR-12-LACA	12/5/2001	6.55	2.5	13.5	
York	North Anna River arm of Lake Anna	38.11556	-77.91389	12	8NAR-12-LACA	4/23/2002	8.5	1	9	
York	North Anna River arm of Lake Anna	38.11556	-77.91389	12	8NAR-12-LACA	5/29/2002	7.2	1.1	25	
York	North Anna River arm of Lake Anna	38.11556	-77.91389	12	8NAR-12-LACA	6/26/2002	5	1.2	28.5	
York	North Anna River arm of Lake Anna	38.11556	-77.91389	12	8NAR-12-LACA	8/21/2002	7.5	0.95	26	
York	North Anna River arm of Lake Anna	38.11556	-77.91389	12	8NAR-12-LACA	10/16/2002	7	1	14.5	
York	North Anna River arm of Lake Anna	38.11194	-77.88639	12	8NAR-12-LACA	4/28/2003	10	0.95	21	
York	North Anna River arm of Lake Anna (DEQ)	38.11194	-77.88639	12	8-NAR054.17	4/28/2003	10	1	19.3	
York	North Anna River arm of Lake Anna	38.11194	-77.88639	12	8NAR-12-LACA	6/16/2003	9.5	0.4	22	
York	North Anna River arm of Lake Anna (DEQ)	38.11194	-77.88639	12	8-NAR054.17	6/16/2003	9.5	0.3		
York	North Anna River arm of Lake Anna	38.11194	-77.88639	12	8NAR-12-LACA	8/19/2003	6.4	1.9	26	
York	North Anna River arm of Lake Anna	38.11194	-77.88639	12	8NAR-12-LACA	10/20/2003	7.6	0.8	10.5	18
York	North Anna River arm of Lake Anna	38.11194	-77.88639	12	8NAR-12-LACA	4/20/2004	7.5	0.9	24	17
York	Gold Mine Creek arm of Lake Anna	38.11111	-77.94306	13	8GMC-13-LACA	5/29/2002	2	1	33	
York	Gold Mine Creek arm of Lake Anna	38.11111	-77.94306	13	8GMC-13-LACA	6/26/2002	1	0.3	28	
York	Gold Mine Creek arm of Lake Anna	38.11111	-77.94306	13	8GMC-13-LACA	8/21/2002	0.6	0.2	23	
York	Gold Mine Creek arm of Lake Anna	38.11111	-77.94306	13	8GMC-13-LACA	10/16/2002				
York	Gold Mine Creek (DEQ)	38.11194	-77.94222	13	8-GMC000.23	4/28/2003		0.7		
York	Gold Mine Creek (DEQ)	38.11194	-77.94222	13	8-GMC000.23	6/16/2003		0.1		
York	Gold Mine Creek (DEQ)	38.11194	-77.94222	13	8-GMC000.23	8/19/2003				
York	Gold Mine Creek (DEQ)	38.11194	-77.94222	13	8-GMC000.23	10/20/2003				19.53
York	Gold Mine Creek off of Thalia Shores	38.11194	-77.94222	13	8GMC-13-LACA	4/20/2004	1.9	0.5	19.5	15
York	ROCKCRK	37.99417	-77.75417	30		3/15/2001	6.2	2.65	10	
York	ROCKCRK	37.99417	-77.75417	30		5/30/2001	9.1	2	26	
York	ROCKCRK	37.99417	-77.75417	30		8/22/2001	7.9	2.8	26.5	
York	ROCKCRK	37.99417	-77.75417	30		12/5/2001				
York	ROCKCRK	37.99417	-77.75417	30		1/22/2002				
York	ROCKCRK	37.99417	-77.75417	30		4/23/2002	8.8392	2.75	10.9	
York	ROCKCRK	37.99417	-77.75417	30		6/26/2002	7.9248	2	30.5	
York	ROCKCRK	37.99417	-77.75417	30		8/21/2002	7	1.85	29	
York	ROCKCRK	37.99417	-77.75417	30		10/16/2002	22	2	15	
York	ROCKCRK	37.99417	-77.75417	30		4/28/2003		2	19	
York	ROCKCRK	37.99417	-77.75417	30		6/16/2003	10.0	2.2	24	
York	ROCKCRK	37.99417	-77.75417	30		8/19/2003	8	2.25	27	
York	ROCKCRK	37.99417	-77.75417	30		10/20/2003	9	2	14.5	25
York	ROCKCRK	37.99417	-77.75417	30		4/20/2004	8.8	2.2	23	22.2
York	MILLPND	38.02056	-77.77472	31		3/15/2001	9.1	2.5	13	
York	MILLPND	38.02056	-77.77472	31		5/30/2001	10.4	2.5	20	

WATER TEMP Secchi depth (C)	DO 0.3m (mg/l)	DO 2.0m (mg/l)	DO Secchi depth (mg/l)	pH 0.3m	pH 2.0m	PHOS 0.3 m Qualifier	PHOS 0.3m (mg/L)	Phos Secchi Depth Qualifier	PHOS Secchi depth (mg/L)	FECOL Qualifier	FECOL 2.0m (MPN/100 ml)	E. coli Qualitifer	E. Coli cfu/100ml	COMMENT	QUALITY CONTROL
16.25			9		7				0.03		3				
26					7				0.04				150		E.coli<25 on 7/1/03
28.5			9.8		7				0.02			<	25		
	9	8.5		7			0.02					<	25		
	11.47	11.95		8.6			0.01						25		
	9.3	10.25		7.5			0.06					<	25	DEQ MONITORED	
9.5			12.4		7				0.083		8				
22			11		8				0.062		8				
28			8.4		7.5									not enough time for PT and FC	
12			10		7				0.048		23				
17			6.45		7				0.6		240				
28.75			9.5		8.5				0.034		50				
28.5			7.5		7.5				0.262		110			Low water; deeper reading NA	Blank FC <2
					7				0.046		140				
17			9.4		7				0.04		13				
25.5					7				0.07				875		E.coli<25 on 7/1/03
27.5			7		7				0.03			<	25		
	8.1	8		7			0.03					<	25		
	13.1	13.94		9.14			0.01						25	DEQ MONITORED	
8.5			11.6		7				0.041	<	2				
22			9		7.4				0.053		50				
27			5.7		7				0.037	<	2				
12			8		7				0.013		4				
					7				0.074					equipment lost during monitor	
25			8.1		7				0.048	<	2				
30			7.3		7.5				0.027	<	2				
29.5			7.9		7.5				0.083	<	2				
19.5			7.7		7				0.046		110				pH 7.0 Blank; TP .076 Blank
17			9		7				0.03	<	2				
			10.7		7.7				0.03		10			DEQ MONITORED	
25					6.5				0.06				300		
25			6.2		7.8				0.07				250	DEQ MONITORED	E.coli<25 on 7/1/03
30			7.6		7				0.02			<	25		
	8.3	8.2		7			0.02					<	25		
	10.1	10.25		7.5			0.05						25		
26			8		8				0.13		7				
29			4.8		7.5				0.258		7				
26.5			4.35		7.4				0.274	<	2			Low water; deeper reading NA	
														Too Shallow	
20.3			10.9		7.6				0.04		10			DEQ MONITORED	
23					6.4				0.13			>	800	DEQ MONITORED	E.coli<25 on 7/1/03
29.52			9.41		8.61				0.03				25	DEQ MONITORED	
	8.39	8.01		7.05	7		0.02						25	DEQ MONITORED	
	7.8			7			0.07					<	25		
14			23.5		7				0.013		4				
27			6.7		7				0.013		4				
34			6.1		7			<	0.01	<	2				
														NA-too shallow	
								<	0.010	<	2			Special monitor	
27.2			7.4		7			<	0.010	<	2				
33.5			6.4		7			<	0.01	<	2				
33			7.1		7				0.016		4				
23			7.25		7				0.02		23				
21.5			8		7				0.01	<	1				
27.5					7				0.01				25		
34			6		7				0.01			<	25		
	7	6.9		7			0.01					<	25		
	8.55	8.45		7			0.01					<	25		
14			4.5		7				0.013		4				
26			7.9		7				0.044		23				

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Major River Basin	Stream Name	Latitude	Longitude	Station Number	DEQ Station ID	MONITOR DATE	DEPTH OF SITE (m)	SECCHI DEPTH (m)	AIR TEMP (C)	WATER TEMP 0.3m (C)
York	MILLPND	38.02056	-77.77472	31		8/22/2001	10.1	3	23.8	
York	MILLPND	38.02056	-77.77472	31		12/5/2001				
York	MILLPND	38.02056	-77.77472	31		1/22/2002				
York	MILLPND	38.02056	-77.77472	31		4/23/2002	10.0584	2.5	8.5	
York	MILLPND	38.02056	-77.77472	31		6/26/2002	8.8392	2.85	29.3	
York	MILLPND	38.02056	-77.77472	31		8/21/2002	8.86968	1.9	24	
York	MILLPND	38.02056	-77.77472	31		10/16/2002	6.5	1.75	14	
York	MILLPND	38.02056	-77.77472	31		4/28/2003	6.2	2	16.5	
York	MILLPND	38.02056	-77.77472	31		6/16/2003	12.0	2.2	24.5	
York	MILLPND	38.02056	-77.77472	31		8/19/2003	9.5	2.3	26	
York	MILLPND	38.02056	-77.77472	31		10/20/2003	11	2.05	13	24
York	MILLPND	38.02056	-77.77472	31		4/20/2004	27	2.4	25	23
York	ELKCRK	38.03167	-77.78028	32		3/15/2001	7.0	2.5	10.5	
York	ELKCRK	38.03167	-77.78028	32		5/30/2001	12.0	2.6	19	
York	ELKCRK	38.03167	-77.78028	32		8/22/2001	9.1	2.75	26.25	
York	ELKCRK	38.03167	-77.78028	32		12/5/2001				
York	ELKCRK	38.03167	-77.78028	32		1/22/2002				
York	ELKCRK	38.03167	-77.78028	32		4/23/2002	10.668	2.5	10.5	
York	ELKCRK	38.03167	-77.78028	32		6/26/2002	4.5	2.25	33	
York	ELKCRK	38.03167	-77.78028	32		8/21/2002	10	2.25	25	
York	ELKCRK	38.03167	-77.78028	32		10/16/2002	7.25	1.8	14.5	
York	ELKCRK	38.03167	-77.78028	32		4/28/2003	10	2.05	24	
York	ELKCRK	38.03167	-77.78028	32		6/16/2003	9.5	1.7	24	
York	ELKCRK	38.03167	-77.78028	32		8/19/2003	10.5	2.1	28	
York	ELKCRK	38.03167	-77.78028	32		10/20/2003	9.5	2.75	15	24.5
York	ELKCRK	38.03167	-77.78028	32		4/20/2004	7.5	1.85	22	21.5
York	Contrary Creek upstream	38.06389	-77.84917	33	8CON-33-LACA	5/30/2001	0.6	0.5	18	
York	Contrary Creek upstream	38.06389	-77.84917	33	8CON-33-LACA	8/22/2001	0.5	0.5	20	
York	Contrary Creek upstream	38.06389	-77.84917	33	8CON-33-LACA	12/5/2001				
York	Contrary Creek upstream	38.06389	-77.84917	33	8CON-33-LACA	4/23/2002	0.6096	0.55	9	
York	Contrary Creek upstream	38.06389	-77.84861	33	8CON-33-LACA	6/26/2002	1	0.8	27	
York	Contrary Creek upstream	38.06389	-77.84917	33	8CON-33-LACA	8/21/2002	1.35	0.8	26	
York	Contrary Creek upstream	38.06389	-77.84917	33	8CON-33-LACA	10/16/2002				
York	Contrary Creek upstream	38.06389	-77.84917	33	8CON-33-LACA	4/28/2003	1.73	1.73	18.5	
York	Contrary Creek upstream	38.06389	-77.84917	33	8CON-33-LACA	6/16/2003	1.2	0.7	25	
York	Contrary Creek upstream	38.06389	-77.84917	33	8CON-33-LACA	8/19/2003	1.7	1.6	27	
York	Contrary Creek upstream	38.06389	-77.84917	33	8CON-33-LACA	10/20/2003	1.2	1.2	11	
York	Contrary Creek upstream	38.06389	-77.84917	33	8CON-33-LACA	4/20/2004	18	0.9	22.5	17
York	Freshwater Creek (upstream tributary of Contrary Creek)	38.05389	-77.84194	34	8FRC-34-LACA	5/30/2001	1.7	0.5	28	
York	Freshwater Creek (upstream tributary of Contrary Creek)	38.05389	-77.84194	34	8FRC-34-LACA	8/22/2001	1.8	1	23	
York	Freshwater Creek (upstream tributary of Contrary Creek)	38.05389	-77.84194	34	8FRC-34-LACA	12/5/2001	1.22	1.3	11	
York	Freshwater Creek (upstream tributary of Contrary Creek)	38.05389	-77.84194	34	8FRC-34-LACA	4/23/2002	1.75	1.75	9	
York	Freshwater Creek (upstream tributary of Contrary Creek)	38.05389	-77.84194	34	8FRC-34-LACA	6/26/2002	1.05	0.8	25.5	
York	Freshwater Creek (upstream tributary of Contrary Creek)	38.05389	-77.84194	34	8FRC-34-LACA	8/21/2002	1	0.7	25	
York	Freshwater Creek (upstream tributary of Contrary Creek)	38.05389	-77.84194	34	8FRC-34-LACA	10/16/2002				
York	Freshwater Creek (upstream tributary of Contrary Creek)	38.05389	-77.84194	34	8FRC-34-LACA	4/28/2003	2.9	1.35	16	
York	Freshwater Creek (upstream tributary of Contrary Creek)	38.05389	-77.84194	34	8FRC-34-LACA	6/16/2003	2.4	0.8	23	
York	Freshwater Creek (upstream tributary of Contrary Creek)	38.05389	-77.84194	34	8FRC-34-LACA	8/19/2003	2.4	0.9	26	
York	Freshwater Creek (upstream tributary of Contrary Creek)	38.05389	-77.84194	34	8FRC-34-LACA	10/20/2003	2.3	1.2	8	
York	Freshwater Creek (upstream tributary of Contrary Creek)	38.05389	-77.84194	34	8FRC-34-LACA	4/20/2004	2.5	0.9	23	16
York	North Anna upstream	38.11944	-77.95417	35	8NAR-35-LACA	5/30/2001	1.5	0.5	20	
York	North Anna upstream	38.11944	-77.95417	35	8NAR-35-LACA	8/22/2001	0.5	0.4	25	
York	North Anna upstream	38.11944	-77.95417	35	8NAR-35-LACA	12/5/2001	0.50	0.25	11	
York	North Anna upstream	38.11944	-77.95417	35	8NAR-35-LACA	4/23/2002	0.8	0.2	8	
York	North Anna upstream	38.11944	-77.95417	35	8NAR-35-LACA	5/29/2002	1.5	0.7	33	
York	North Anna upstream	38.11944	-77.95417	35	8NAR-35-LACA	6/26/2002	0.75	0.25	29.5	
York	North Anna upstream	38.11944	-77.95417	35	8NAR-35-LACA	8/21/2002	0.9	0.1	25	
York	North Anna upstream	38.11944	-77.95417	35	8NAR-35-LACA	10/16/2002				
York	North Anna upstream	38.11944	-77.94583	35		4/28/2003	1.5	1	20	
York	North Anna upstream	38.11944	-77.94583	35		6/16/2003	1.6	0.2	23	

WATER TEMP Secchi depth (C)	DO 0.3m (mg/l)	DO 2.0m (mg/l)	DO Secchi depth (mg/l)	pH 0.3m	pH 2.0m	PHOS 0.3 m Qualifier	PHOS 0.3m (mg/L)	Phos Secchi Depth Qualifier	PHOS Secchi depth (mg/L)	FECOL Qualifier	FECOL 2.0m (MPN/100 ml)	E. coli Qualitifer	E. Coli cfu/100ml	COMMENT	QUALITY CONTROL
31.8			7.1		7			<	0.01		4				
														NA-too shallow	
						<	0.010		0.041					Special monitor	
24			7.9		7				0.016		9				
33			7.4		7				0.018		4				
33			6.85		7			<	0.01		17				
23			7.6		7				0.097		4				
22			8.1		7				0.01	<	1				
27					7				0.01				25		
36			7.4						0.02			<	25		
	8.1	8.2		7			0.01					<	25		
	9.3	8.1		7			0.02					<	25		
13.5			10.2		7				0.06		17				
25.5			9		7				0.076		23				
31			7		7			<	0.01	<	2				
														NA-too shallow	
						<	0.010	<	0.01					Special monitor	
28.4			7		7				0.144		50				
34.5			6.75		7				0.03		4				
33			7.2		7			<	0.01		4				
22			7.6		7				0.064		7				
22			8.6		7				0.01		3				PT 0.02 Blank
28.5					7				0.01			<	25		
32			6.4		7				0.01			<	25		
	7.7	8.25		7			0.01					<	25		
	7.4	7.7		7			0.02					<	25		
20			6.5		6				0.069		9				
24			5.5		4.8						2				
														NA-too shallow	
16.3			8.2		6			<	0.010		110				
29.75			6.9		6.5				0.062		110				
29			7.2		7			<	0.01		8			Low water; deeper reading NA Too Shallow	Blank FC <2
17			8.6		5			<	0.01	<	1				
26					6				0.01				175		too shallow for 2m
29			7.5		6				0.01			<	25		
	8.6			6			0.01					<	25		
	9.8			6			0.01					<	25		
21			10		6				0.092		23				
27			10		7				0.06	<	2				
11			8.65		6				0.041	<	2.0				
17			7.7		6.5				0.032	<	2				
28.75			6.5		6.5				0.013	<	2				
29			6.9		7			<	0.01		4			Low water; deeper reading NA Too Shallow	
17.5			7.8		6				0.01		3				
25					6				0.01				125		too shallow for 2m
28.5			7.5		7				0.01			<	25		
	8.8			7			0.01					<	25		
	8.9	8.7		6			0.03					<	25		
17			8.3		7				0.171		240				
24			4.85		7				0.2		8				
9.75			7.4		7				0.137		23				
13			6.4		6.5				0.153	>	1600				
26			7.7		8				0.116		8				
28.5			4.6		7				0.19	<	2				
26.5			3.75		7.2				0.362	<	2			Low water; deeper reading NA Too Shallow	
17			9.4		7				0.03		1				
20					6				0.08				150		E.coli<25 on 7/1/03

LAKE ANNA CIVIC ASSOCIATION WATER QUALITY MONITORING PROJECT REPORT Master Data File 2001-2004

Major River Basin	Stream Name	Latitude	Longitude	Station Number	DEQ Station ID	MONITOR DATE	DEPTH OF SITE (m)	SECCHI DEPTH (m)	AIR TEMP (C)	WATER TEMP 0.3m (C)
York	North Anna upstream	38.11944	-77.94583	35		8/19/2003	1.4	0.5	25	
York	North Anna upstream	38.11944	-77.94583	35		10/20/2003	1.4	0.55	8.5	13.5
York	North Anna upstream	38.11944	-77.94583	35		4/20/2004	1.4	0.42	19	16.5
York	Plentiful Creek upstream	38.14361	-77.85556	36	8PLT-36-LACA	5/30/2001	1.5	1	15	
York	Plentiful Creek upstream	38.14361	-77.85556	36	8PLT-36-LACA	8/22/2001	1.5	0.75	19	
York	Plentiful Creek upstream	38.14361	-77.85556	36	8PLT-36-LACA	12/5/2001	0.68	0.67	12	
York	Plentiful Creek upstream	38.14361	-77.85556	36	8PLT-36-LACA	4/23/2002	1	1	8	
York	Plentiful Creek upstream	38.14361	-77.85556	36	8PLT-36-LACA	6/26/2002	0.66	bottom	30.5	
York	Plentiful Creek upstream	38.14361	-77.85556	36	8PLT-36-LACA	8/21/2002	0.3	0.3	27	
York	Plentiful Creek upstream	38.14361	-77.85556	36	8PLT-36-LACA	10/16/2002	1.5	0.6	13.5	
York	Plentiful Creek upstream	38.14361	-77.85556	36	8PLT-36-LACA	4/28/2003	1.5	1.15	23	
York	Plentiful Creek upstream	38.14361	-77.85556	36	8PLT-36-LACA	6/16/2003	3.2	1.2	28	
York	Plentiful Creek upstream	38.14361	-77.85556	36	8PLT-36-LACA	8/19/2003	2	1	26	
York	Plentiful Creek upstream	38.14361	-77.85556	36	8PLT-36-LACA	10/20/2003	3.2	1.1	11.5	17
York	Plentiful Creek upstream	38.14361	-77.85556	36	8PLT-36-LACA	4/20/2004	1.9	0.7	24	17
York	Terry's Run upstream	38.16889	-77.91611	37	8TRY-37-LACA	5/30/2001	0.9	bottom	18	
York	Terry's Run upstream	38.16889	-77.91611	37	8TRY-37-LACA	8/22/2001				
York	Terry's Run upstream	38.16889	-77.91611	37	8TRY-37-LACA	12/5/2001				
York	Terry's Run upstream	38.16889	-77.91611	37	8TRY-37-LACA	4/23/2002				
York	Terry's Run upstream	38.16889	-77.91611	37	8TRY-37-LACA	6/26/2002				
York	Terry's Run upstream	38.16889	-77.91611	37	8TRY-37-LACA	8/21/2002	NA			
York	Terry's Run upstream	38.16889	-77.91611	37	8TRY-37-LACA	10/16/2002				
York	Terry's Run upstream	38.16889	-77.91611	37	8TRY-37-LACA	4/28/2003	1.2	0.8	22.5	
York	Terry's Run upstream	38.16889	-77.91611	37	8TRY-37-LACA	6/16/2003	0.8	0.5	22	
York	Terry's Run upstream	38.16889	-77.91611	37	8TRY-37-LACA	8/19/2003	0.7	0.5	24.5	
York	Terry's Run upstream	38.16889	-77.91611	37	8TRY-37-LACA	10/20/2003	0.9	0.7	14.8	14.5
York	Terry's Run upstream	38.16889	-77.91611	37	8TRY-37-LACA	4/20/2004	0.8	0.5	23	19
York	Pamunkey Creek upstream	38.14167	-77.93167	38	8PMC-38-LACA	5/30/2001	0.3	0.3	16	
York	Pamunkey Creek upstream	38.14167	-77.93167	38	8PMC-38-LACA	8/22/2001				
York	Pamunkey Creek upstream	38.14167	-77.93167	38	8PMC-38-LACA	12/5/2001				
York	Pamunkey Creek upstream	38.14167	-77.93167	38	8PMC-38-LACA	4/23/2002				
York	Pamunkey Creek upstream	38.14167	-77.93167	38	8PMC-38-LACA	6/26/2002				
York	Pamunkey Creek upstream	38.14167	-77.93167	38	8PMC-38-LACA	8/21/2002	NA			
York	Pamunkey Creek upstream	38.14167	-77.93167	38	8PMC-38-LACA	10/16/2002				
York	Pamunkey Creek upstream	38.14167	-77.93167	38	8PMC-38-LACA	4/28/2003	1.2	0.6	20	
York	Pamunkey Creek upstream	38.14167	-77.93167	38	8PMC-38-LACA	6/16/2003	1.4	0.3	21	
York	Pamunkey Creek upstream	38.14167	-77.93167	38	8PMC-38-LACA	8/19/2003	1.3	0.3	24	
York	Pamunkey Creek upstream	38.14167	-77.93167	38	8PMC-38-LACA	10/20/2003	1.5	0.6	10	14
York	Pamunkey Creek upstream	38.14167	-77.93167	38	8PMC-38-LACA	4/20/2004	1.1	0.2	21.5	
York	Main Lake	38.04917	-77.75139	13A	8NAR-13A-LACA	3/15/2001	16.2	3.5	9	
York	Main Lake	38.04917	-77.75139	13A	8NAR-13A-LACA	5/30/2001	17.1	2.35	18	
York	Main Lake	38.04917	-77.75139	13A	8NAR-13A-LACA	12/5/2001	16.15	3.5	11.8	
York	Main Lake	38.04917	-77.75139	13A	8NAR-13A-LACA	6/26/2002	1.5	1.5		

WATER TEMP Secchi depth (C)	DO 0.3m (mg/l)	DO 2.0m (mg/l)	DO Secchi depth (mg/l)	pH 0.3m	pH 2.0m	PHOS 0.3 m Qualifier	PHOS 0.3m (mg/L)	Phos Secchi Depth Qualifier	PHOS Secchi depth (mg/L)	FECOL Qualifier	FECOL 2.0m (MPN/100 ml)	E. coli Qualitifer	E. Coli cfu/100ml	COMMENT	QUALITY CONTROL
26			8		7				0.04			<	25		
	8.5			7			0.03					<	25		
	8.2			6			0.06						150		
21			9		7				0.081		90				
25.5			7.25		7				0.067		2				
9			10		6.5				0.023		23				
16			8.5		7				0.046		500				
28.5			7		7				0.064		4				
27.5			6.1		7				0.055	<	2			Low water; deeper reading NA	Blank FC <2
17			7.9						0.109		30				
16			7.75		7				0.03		6				
29					7				0.02				1775		E.coli<25 on 7/1/03
28.5			7.95		7				0.02			<	25		
	8.5			7			0.02					<	25		
	9.45			7			0.05					<	25		
21			8.4		7				0.162		150				
														NA - dredging nearby	
														NA-too shallow	
														NOT ACCESSIBLE	
														NOT ACCESSIBLE	
														Too Shallow	
17			8		6.8				0.04		17				
25					7				0.06				250		E.coli<25 on 7/1/03
27.5			8.4		7				0.04			<	25		
	8.6			7			0.03					<	25		
	9.6			7			0.08					<	25		
21			10.75		8				0.125		43				
														NA - not enough time	
														NA-too shallow	
														NOT ACCESSIBLE	
														NOT ACCESSIBLE	
														Too Shallow	
17			9.2		7				0.04		49				
23.5					6.5				0.08				400		E.coli<25 on 7/1/03
27			8.6		8				0.06			<	25		
	9.6	8		7			0.03					<	25		
	5.6			7			0.12						50		
			10.5		6.9				0.023						
			7.4		7				0.044						
			9.1		6				0.069						
									0.016					SPECIAL MONITOR	

COMMONWEALTH of VIRGINIA

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November 30, 2006

Mr. David K. Paylor
Director, Department of Environmental Quality
629 East Main Street
Richmond, Virginia 23219

Dear Mr. Paylor:

I am responding to your request for an official advisory opinion in accordance with § 2.2-505 of the *Code of Virginia*.

Issue Presented

You ask whether the State Water Control Board can by permit impose thermal effluent limitations on the discharge by Dominion Nuclear North Anna, LLC, from its reactors at its North Anna Power Station into a series of connected cooling lagoons.

Response

It is my opinion that the State Water Control Board does not have the legal authorization to impose limitations on thermal effluent involved in discharges by Dominion Nuclear North Anna, LLC, from its reactors at its North Anna Power Station.

Background

You state that Dominion Nuclear North Anna, LLC ("Dominion"), operates two nuclear reactors at its North Anna Power Station ("NAPS"). Further, NAPS disposes waste heat by running water from the North Anna Reservoir through condensers. The heated water is then discharged to a series of three connected cooling lagoons, separated from the main body of the lake by dikes. You relate that the lagoons are owned and operated by Dominion and collectively are referred to as the Waste Heat Treatment Facility ("WHTF"). WHTF discharges to the North Anna Reservoir through a dike owned and operated by Dominion. Together, the Reservoir and the lagoons make up Lake Anna. You state that WHTF was designed, built, and permitted by the State Water Control Board to be used as a treatment facility for waste heat. Dominion considers WHTF to be an integral part of the power station. Because WHTF specifically was designed as a waste treatment system, you indicate that the Board has not imposed restrictions on the discharge of heat from NAPS into WHTF.

Applicable Law and Discussion

The Virginia Pollutant Discharge Elimination System ("VPDES") program[1] is administered by the State Water Control Board[2] under the State Water Control Law[3] pursuant to approval by the federal Environmental Protection Agency ("EPA").[4] The VPDES program regulates the discharge of pollutants, including waste heat, into "surface waters" from point sources such as those about which you inquire. The Board has adopted regulations to implement this program.[5]

The key to answering the question you raise is found in 9 VAC 25-31-10 of the VPDES program. In defining "surface waters" for the purpose of establishing the jurisdiction of this program, the Board provides that:

> *"Surface waters"* means:
>
> ....
>
> 7. Wetlands adjacent to waters (other than waters that are themselves wetlands) identified in subdivisions 1 through 6 of this definition.
>
> *Waste treatment systems, including treatment ponds or lagoons designed to meet the requirements of the C*[lean] *W*[ater] *A*[ct] *and the law, are not surface waters.*[6]

Based on this clear regulatory language, you indicate that the Board historically has rejected jurisdiction over such matters and has declined to regulate WHTF under the VPDES program.[7] Additionally, the Board has not imposed conditions on the discharge of waste heat into WHTF from NAPS.[8]

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[1] *See* 9 Va. Admin. Code §§ 25-31-10 to 25-31-940 (2004 & Supp. 2006).

[2] *See* VA. CODE ANN. tit. 62.1, ch. 3.2, §§ 62.1-44.36 to 62.1-44.44 (2006) (setting forth statutory scheme governing conservation of water resources and State Water Control Board).

[3] *See* tit. 62.1, ch. 3, §§ 62.1-44.2 to 62.1-44.34:28 (2006) ("State Water Control Law").

[4] The federal Clean Water Act establishes a permit requirement for discharges of pollutants into waters of the United States. *See* 33 U.S.C.S. §§ 1342 to 1345 (LexisNexis 2001); 40 C.F.R. pt. 123 (2006). The EPA Administrator approved the State Water Control Board's program on March 31, 1975. *See* Environmental Protection Agency, NPDES Permit Program Results for Virginia, http://cfpub.epa.gov/npdes/stateinfo.cfm?&view=state&state_id=47&state=VA (last visited Nov. 1, 2006); *see also* 40 Fed. Reg. 20,129 (May 8, 1975).

[5] *See supra* note 1.

[6] 9 VA. ADMIN. CODE § 25-31-10 (Supp. 2006) (emphasis added). The State Water Control Board has the authority under state law to define "state waters" and "surface waters" and its VPDES regulations were lawfully adopted. 1999 Op. Va. Att'y Gen. 179, 180-81. The comparable federal regulation, 40 C.F.R. § 122.2, which defines "waters of the United States" in subpart g thereof, also contains an exemption for waste treatment systems. That regulation, however, specifically excludes "cooling ponds" from the definition of such systems. The regulations of the State Water Control Board were approved by EPA and contain no such exclusion. *See supra* note 4 and accompanying text.

[7] *See infra* note 8.

[8] You indicate that the State Water Control Board has imposed permit conditions on discharges of heated water into the North Anna Reservoir from WHTF. This is consistent with the Board's treatment of the Reservoir as a surface water under VPDES regulations.

While the language of 9 VAC 25-31-10 would not appear to require interpretation, an agency's interpretation and enforcement of its regulations is entitled to great deference.[9] Courts will not overturn an agency's interpretation of its regulations unless it is found to be arbitrary and capricious.[10] Conversely, an agency that ignores both the plain language and its prior consistent application of a regulation risks a successful challenge to any effort to change such application.[11]

Conclusion

Accordingly, it is my opinion that the State Water Control Board does not have the legal authorization to impose limitations on thermal effluent involved in discharges by Dominion Nuclear North Anna, LLC, from its reactors at its North Anna Power Station.

Thank you for letting me be of service to you.

Sincerely,

Robert F. McDonnell

3:73; 1:941/06-096

[9] Holtzman Oil Corp. v. Commonwealth, 32 Va. App. 532, 539, 529 S.E.2d 333, 337 (2000); Hilliards v. Jackson, 28 Va. App. 475, 479-80, 506 S.E.2d 547, 550 (1998); Va. Real Estate Bd. v. Clay, 9 Va. App. 152, 160, 384 S.E.2d 622, 627 (1989).

[10] Johnston-Willis, Ltd. v. Kenley, 6 Va. App. 231, 246, 369 S.E.2d 1, 9 (1988), *quoted in* Fralin v. Kozlowski, 18 Va. App. 697, 701, 447 S.E.2d 238, 240 (1994).

[11] Any such challenge would, of course, be brought under Virginia's Administrative Process Act. *See* §§ 2.2-4000 to 2.2-4031 (2005 & Supp. 2006). Under § 2.2-4027 of the Act, a party challenging a decision of the State Water Control Board would need to show, *inter alia*, "compliance with ... jurisdiction limitations" and "the substantiality of the evidentiary support for findings of fact." Based on the facts you provide and 9 VAC 25-31-10, any effort by the Board to regulate the situation you describe may not withstand judicial scrutiny.

FRESHWATER
WATER QUALITY CRITERIA / WASTELOAD ALLOCATION ANALYSIS

Facility Name: Dominion - North Anna Power Station Permit No.: VA0052451

Receiving Stream: Lake Anna Version: OWP Guidance Memo 00-2011 (8/24/00)

Stream Information			Stream Flows			Mixing Information			Effluent Information		
Mean Hardness (as CaCO3) =	25	mg/L	1Q10 (Annual) =	0	MGD	Annual - 1Q10 Mix =	100	%	Mean Hardness (as CaCO3) =	25	mg/L
90% Temperature (Annual) =	31	deg C	7Q10 (Annual) =	0	MGD	- 7Q10 Mix =	100	%	90% Temp (Annual) =	31	deg C
90% Temperature (Wet season) =	31	deg C	30Q10 (Annual) =	0	MGD	- 30Q10 Mix =	100	%	90% Temp (Wet season) =	31	deg C
90% Maximum pH =	7.7	SU	1Q10 (Wet season) =	0	MGD	Wet Season - 1Q10 Mix =	100	%	90% Maximum pH =	7.7	SU
10% Maximum pH =	6.6	SU	30Q10 (Wet season)	0	MGD	- 30Q10 Mix =	100	%	10% Maximum pH =	6.6	SU
Tier Designation (1 or 2) =	1		30Q5 =	0	MGD				Discharge Flow =	2126	MGD
Public Water Supply (PWS) Y/N? =	n		Harmonic Mean =	0	MGD						
Trout Present Y/N? =	n		Annual Average =	NA	MGD						
Early Life Stages Present Y/N? =	y										

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				**Most Limiting Allocations**			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	**Acute**	**Chronic**	**HH (PWS)**	**HH**
Acenapthene	0	--	--	na	2.7E+03	--	--	na	2.7E+03	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**2.7E+03**
Acrolein	0	--	--	na	7.8E+02	--	--	na	7.8E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**7.8E+02**
Acrylonitrile[C]	0	--	--	na	6.6E+00	--	--	na	6.6E+00	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**6.6E+00**
Aldrin [C]	0	3.0E+00	--	na	1.4E-03	3.0E+00	--	na	1.4E-03	--	--	--	--	--	--	--	--	**3.0E+00**	**--**	**na**	**1.4E-03**
Ammonia-N (mg/l) (Yearly)	0	1.44E+01	1.24E+00	na	--	1.4E+01	1.2E+00	na	--	--	--	--	--	--	--	--	--	**1.4E+01**	**1.2E+00**	**na**	**--**
Ammonia-N (mg/l) (High Flow)	0	1.44E+01	1.24E+00	na	--	1.4E+01	1.2E+00	na	--	--	--	--	--	--	--	--	--	**1.4E+01**	**1.2E+00**	**na**	**--**
Anthracene	0	--	--	na	1.1E+05	--	--	na	1.1E+05	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.1E+05**
Antimony	0	--	--	na	4.3E+03	--	--	na	4.3E+03	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**4.3E+03**
Arsenic	o	3.4E+02	1.5E+02	na	--	3.4E+02	1.5E+02	na	--	--	--	--	--	--	--	--	--	**3.4E+02**	**1.5E+02**	**na**	**--**
Barium	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
Benzene [C]	0	--	--	na	7.1E+02	--	--	na	7.1E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**7.1E+02**
Benzidine[C]	0	--	--	na	5.4E-03	--	--	na	5.4E-03	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**5.4E-03**
Benzo (a) anthracene [C]	0	--	--	na	4.9E-01	--	--	na	4.9E-01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**4.9E-01**
Benzo (b) fluoranthene [C]	0	--	--	na	4.9E-01	--	--	na	4.9E-01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**4.9E-01**
Benzo (k) fluoranthene [C]	0	--	--	na	4.9E-01	--	--	na	4.9E-01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**4.9E-01**
Benzo (a) pyrene [C]	0	--	--	na	4.9E-01	--	--	na	4.9E-01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**4.9E-01**
Bis2-Chloroethyl Ether	0	--	--	na	1.4E+01	--	--	na	1.4E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.4E+01**
Bis2-Chloroisopropyl Ether	0	--	--	na	1.7E+05	--	--	na	1.7E+05	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.7E+05**
Bromoform [C]	0	--	--	na	3.6E+03	--	--	na	3.6E+03	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**3.6E+03**
Butylbenzylphthalate	0	--	--	na	5.2E+03	--	--	na	5.2E+03	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**5.2E+03**
Cadmium	0	8.2E-01	3.8E-01	na	--	8.2E-01	3.8E-01	na	--	--	--	--	--	--	--	--	--	**8.2E-01**	**3.8E-01**	**na**	**--**
Carbon Tetrachloride [C]	0	--	--	na	4.4E+01	--	--	na	4.4E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**4.4E+01**
Chlordane [C]	0	2.4E+00	4.3E-03	na	2.2E-02	2.4E+00	4.3E-03	na	2.2E-02	--	--	--	--	--	--	--	--	**2.4E+00**	**4.3E-03**	**na**	**2.2E-02**
Chloride	0	8.6E+05	2.3E+05	na	--	8.6E+05	2.3E+05	na	--	--	--	--	--	--	--	--	--	**8.6E+05**	**2.3E+05**	**na**	**--**
TRC	0	1.9E+01	1.1E+01	na	--	1.9E+01	1.1E+01	na	--	--	--	--	--	--	--	--	--	**1.9E+01**	**1.1E+01**	**na**	**--**
Chlorobenzene	0	--	--	na	2.1E+04	--	--	na	2.1E+04	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**2.1E+04**

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				**Most Limiting Allocations**			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	**Acute**	**Chronic**	**HH (PWS)**	**HH**
Chlorodibromomethane[C]	0	--	--	na	3.4E+02	--	--	na	3.4E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**3.4E+02**
Chloroform [C]	0	--	--	na	2.9E+04	--	--	na	2.9E+04	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**2.9E+04**
2-Chloronaphthalene	0	--	--	na	4.3E+03	--	--	na	4.3E+03	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**4.3E+03**
2-Chlorophenol	0	--	--	na	4.0E+02	--	--	na	4.0E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**4.0E+02**
Chlorpyrifos	0	8.3E-02	4.1E-02	na	--	8.3E-02	4.1E-02	na	--	--	--	--	--	--	--	--	--	**8.3E-02**	**4.1E-02**	**na**	**--**
Chromium III	0	1.8E+02	2.4E+01	na	--	1.8E+02	2.4E+01	na	--	--	--	--	--	--	--	--	--	**1.8E+02**	**2.4E+01**	**na**	**--**
Chromium VI	0	1.6E+01	1.1E+01	na	--	1.6E+01	1.1E+01	na	--	--	--	--	--	--	--	--	--	**1.6E+01**	**1.1E+01**	**na**	**--**
Chromium, Total	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
Chrysene [C]	0	--	--	na	4.9E-01	--	--	na	4.9E-01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**4.9E-01**
Copper	0	3.6E+00	2.7E+00	na	--	3.6E+00	2.7E+00	na	--	--	--	--	--	--	--	--	--	**3.6E+00**	**2.7E+00**	**na**	**--**
Cyanide	0	2.2E+01	5.2E+00	na	2.2E+05	2.2E+01	5.2E+00	na	2.2E+05	--	--	--	--	--	--	--	--	**2.2E+01**	**5.2E+00**	**na**	**2.2E+05**
DDD [C]	0	--	--	na	8.4E-03	--	--	na	8.4E-03	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**8.4E-03**
DDE [C]	0	--	--	na	5.9E-03	--	--	na	5.9E-03	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**5.9E-03**
DDT [C]	0	1.1E+00	1.0E-03	na	5.9E-03	1.1E+00	1.0E-03	na	5.9E-03	--	--	--	--	--	--	--	--	**1.1E+00**	**1.0E-03**	**na**	**5.9E-03**
Demeton	0	--	1.0E-01	na	--	--	1.0E-01	na	--	--	--	--	--	--	--	--	--	**--**	**1.0E-01**	**na**	**--**
Dibenz(a,h)anthracene [C]	0	--	--	na	4.9E-01	--	--	na	4.9E-01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**4.9E-01**
Dibutyl phthalate	0	--	--	na	1.2E+04	--	--	na	1.2E+04	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.2E+04**
Dichloromethane (Methylene Chloride) [C]	0	--	--	na	1.6E+04	--	--	na	1.6E+04	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.6E+04**
1,2-Dichlorobenzene	0	--	--	na	1.7E+04	--	--	na	1.7E+04	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.7E+04**
1,3-Dichlorobenzene	0	--	--	na	2.6E+03	--	--	na	2.6E+03	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**2.6E+03**
1,4-Dichlorobenzene	0	--	--	na	2.6E+03	--	--	na	2.6E+03	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**2.6E+03**
3,3-Dichlorobenzidine[C]	0	--	--	na	7.7E-01	--	--	na	7.7E-01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**7.7E-01**
Dichlorobromomethane [C]	0	--	--	na	4.6E+02	--	--	na	4.6E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**4.6E+02**
1,2-Dichloroethane [C]	0	--	--	na	9.9E+02	--	--	na	9.9E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**9.9E+02**
1,1-Dichloroethylene	0	--	--	na	1.7E+04	--	--	na	1.7E+04	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.7E+04**
1,2-trans-dichloroethylene	0	--	--	na	1.4E+05	--	--	na	1.4E+05	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.4E+05**
2,4-Dichlorophenol	0	--	--	na	7.9E+02	--	--	na	7.9E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**7.9E+02**
2,4-Dichlorophenoxy acetic acid (2,4-D)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
1,2-Dichloropropane[C]	0	--	--	na	3.9E+02	--	--	na	3.9E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**3.9E+02**
1,3-Dichloropropene	0	--	--	na	1.7E+03	--	--	na	1.7E+03	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.7E+03**
Dieldrin [C]	0	2.4E-01	5.6E-02	na	1.4E-03	2.4E-01	5.6E-02	na	1.4E-03	--	--	--	--	--	--	--	--	**2.4E-01**	**5.6E-02**	**na**	**1.4E-03**
Diethyl Phthalate	0	--	--	na	1.2E+05	--	--	na	1.2E+05	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.2E+05**
Di-2-Ethylhexyl Phthalate [C]	0	--	--	na	5.9E+01	--	--	na	5.9E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**5.9E+01**
2,4-Dimethylphenol	0	--	--	na	2.3E+03	--	--	na	2.3E+03	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**2.3E+03**
Dimethyl Phthalate	0	--	--	na	2.9E+06	--	--	na	2.9E+06	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**2.9E+06**
Di-n-Butyl Phthalate	0	--	--	na	1.2E+04	--	--	na	1.2E+04	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.2E+04**
2,4 Dinitrophenol	0	--	--	na	1.4E+04	--	--	na	1.4E+04	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.4E+04**
2-Methyl-4,6-Dinitrophenol	0	--	--	na	7.65E+02	--	--	na	7.7E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**7.7E+02**
2,4-Dinitrotoluene [C]	0	--	--	na	9.1E+01	--	--	na	9.1E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**9.1E+01**
Dioxin (2,3,7,8-tetrachlorodibenzo-p-dioxin) (ppq)	0	--	--	na	1.2E-06	--	--	na	na	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**na**
1,2-Diphenylhydrazine[C]	0	--	--	na	5.4E+00	--	--	na	5.4E+00	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**5.4E+00**
Alpha-Endosulfan	0	2.2E-01	5.6E-02	na	2.4E+02	2.2E-01	5.6E-02	na	2.4E+02	--	--	--	--	--	--	--	--	**2.2E-01**	**5.6E-02**	**na**	**2.4E+02**
Beta-Endosulfan	0	2.2E-01	5.6E-02	na	2.4E+02	2.2E-01	5.6E-02	na	2.4E+02	--	--	--	--	--	--	--	--	**2.2E-01**	**5.6E-02**	**na**	**2.4E+02**
Endosulfan Sulfate	0	--	--	na	2.4E+02	--	--	na	2.4E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**2.4E+02**
Endrin	0	8.6E-02	3.6E-02	na	8.1E-01	8.6E-02	3.6E-02	na	8.1E-01	--	--	--	--	--	--	--	--	**8.6E-02**	**3.6E-02**	**na**	**8.1E-01**
Endrin Aldehyde	0	--	--	na	8.1E-01	--	--	na	8.1E-01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**8.1E-01**

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				**Most Limiting Allocations**			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	**Acute**	**Chronic**	**HH (PWS)**	**HH**
Ethylbenzene	0	--	--	na	2.9E+04	--	--	na	2.9E+04	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**2.9E+04**
Fluoranthene	0	--	--	na	3.7E+02	--	--	na	3.7E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**3.7E+02**
Fluorene	0	--	--	na	1.4E+04	--	--	na	1.4E+04	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.4E+04**
Foaming Agents	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
Guthion	0	--	1.0E-02	na	--	--	1.0E-02	na	--	--	--	--	--	--	--	--	--	**--**	**1.0E-02**	**na**	**--**
Heptachlor [C]	0	5.2E-01	3.8E-03	na	2.1E-03	5.2E-01	3.8E-03	na	2.1E-03	--	--	--	--	--	--	--	--	**5.2E-01**	**3.8E-03**	**na**	**2.1E-03**
Heptachlor Epoxide[C]	0	5.2E-01	3.8E-03	na	1.1E-03	5.2E-01	3.8E-03	na	1.1E-03	--	--	--	--	--	--	--	--	**5.2E-01**	**3.8E-03**	**na**	**1.1E-03**
Hexachlorobenzene[C]	0	--	--	na	7.7E-03	--	--	na	7.7E-03	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**7.7E-03**
Hexachlorobutadiene[C]	0	--	--	na	5.0E+02	--	--	na	5.0E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**5.0E+02**
Hexachlorocyclohexane Alpha-BHC[C]	0	--	--	na	1.3E-01	--	--	na	1.3E-01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.3E-01**
Hexachlorocyclohexane Beta-BHC[C]	0	--	--	na	4.6E-01	--	--	na	4.6E-01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**4.6E-01**
Hexachlorocyclohexane Gamma-BHC[C] (Lindane)	0	9.5E-01	na	na	6.3E-01	9.5E-01	--	na	6.3E-01	--	--	--	--	--	--	--	--	**9.5E-01**	**--**	**na**	**6.3E-01**
Hexachlorocyclopentadiene	0	--	--	na	1.7E+04	--	--	na	1.7E+04	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.7E+04**
Hexachloroethane[C]	0	--	--	na	8.9E+01	--	--	na	8.9E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**8.9E+01**
Hydrogen Sulfide	0	--	2.0E+00	na	--	--	2.0E+00	na	--	--	--	--	--	--	--	--	--	**--**	**2.0E+00**	**na**	**--**
Indeno (1,2,3-cd) pyrene [C]	0	--	--	na	4.9E-01	--	--	na	4.9E-01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**4.9E-01**
Iron	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
Isophorone[C]	0	--	--	na	2.6E+04	--	--	na	2.6E+04	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**2.6E+04**
Kepone	0	--	0.0E+00	na	--	--	0.0E+00	na	--	--	--	--	--	--	--	--	--	**--**	**0.0E+00**	**na**	**--**
Lead	0	2.0E+01	2.3E+00	na	--	2.0E+01	2.3E+00	na	--	--	--	--	--	--	--	--	--	**2.0E+01**	**2.3E+00**	**na**	**--**
Malathion	0	--	1.0E-01	na	--	--	1.0E-01	na	--	--	--	--	--	--	--	--	--	**--**	**1.0E-01**	**na**	**--**
Manganese	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
Mercury	0	1.4E+00	7.7E-01	na	5.1E-02	1.4E+00	7.7E-01	na	5.1E-02	--	--	--	--	--	--	--	--	**1.4E+00**	**7.7E-01**	**na**	**5.1E-02**
Methyl Bromide	0	--	--	na	4.0E+03	--	--	na	4.0E+03	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**4.0E+03**
Methoxychlor	0	--	3.0E-02	na	--	--	3.0E-02	na	--	--	--	--	--	--	--	--	--	**--**	**3.0E-02**	**na**	**--**
Mirex	0	--	0.0E+00	na	--	--	0.0E+00	na	--	--	--	--	--	--	--	--	--	**--**	**0.0E+00**	**na**	**--**
Monochlorobenzene	0	--	--	na	2.1E+04	--	--	na	2.1E+04	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**2.1E+04**
Nickel	0	5.6E+01	6.3E+00	na	4.6E+03	5.6E+01	6.3E+00	na	4.6E+03	--	--	--	--	--	--	--	--	**5.6E+01**	**6.3E+00**	**na**	**4.6E+03**
Nitrate (as N)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
Nitrobenzene	0	--	--	na	1.9E+03	--	--	na	1.9E+03	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.9E+03**
N-Nitrosodimethylamine[C]	0	--	--	na	8.1E+01	--	--	na	8.1E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**8.1E+01**
N-Nitrosodiphenylamine[C]	0	--	--	na	1.6E+02	--	--	na	1.6E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.6E+02**
N-Nitrosodi-n-propylamine[C]	0	--	--	na	1.4E+01	--	--	na	1.4E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.4E+01**
Parathion	0	6.5E-02	1.3E-02	na	--	6.5E-02	1.3E-02	na	--	--	--	--	--	--	--	--	--	**6.5E-02**	**1.3E-02**	**na**	**--**
PCB-1016	0	--	1.4E-02	na	--	--	1.4E-02	na	--	--	--	--	--	--	--	--	--	**--**	**1.4E-02**	**na**	**--**
PCB-1221	0	--	1.4E-02	na	--	--	1.4E-02	na	--	--	--	--	--	--	--	--	--	**--**	**1.4E-02**	**na**	**--**
PCB-1232	0	--	1.4E-02	na	--	--	1.4E-02	na	--	--	--	--	--	--	--	--	--	**--**	**1.4E-02**	**na**	**--**
PCB-1242	0	--	1.4E-02	na	--	--	1.4E-02	na	--	--	--	--	--	--	--	--	--	**--**	**1.4E-02**	**na**	**--**
PCB-1248	0	--	1.4E-02	na	--	--	1.4E-02	na	--	--	--	--	--	--	--	--	--	**--**	**1.4E-02**	**na**	**--**
PCB-1254	0	--	1.4E-02	na	--	--	1.4E-02	na	--	--	--	--	--	--	--	--	--	**--**	**1.4E-02**	**na**	**--**
PCB-1260	0	--	1.4E-02	na	--	--	1.4E-02	na	--	--	--	--	--	--	--	--	--	**--**	**1.4E-02**	**na**	**--**
PCB Total[C]	0	--	--	na	1.7E-03	--	--	na	1.7E-03	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.7E-03**

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				**Most Limiting Allocations**			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	**Acute**	**Chronic**	**HH (PWS)**	**HH**
Pentachlorophenol [C]	0	5.8E+00	4.5E+00	na	8.2E+01	5.8E+00	4.5E+00	na	8.2E+01	--	--	--	--	--	--	--	--	**5.8E+00**	**4.5E+00**	**na**	**8.2E+01**
Phenol	0	--	--	na	4.6E+06	--	--	na	4.6E+06	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**4.6E+06**
Pyrene	0	--	--	na	1.1E+04	--	--	na	1.1E+04	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.1E+04**
Radionuclides (pCi/l except Beta/Photon)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
Gross Alpha Activity	0	--	--	na	1.5E+01	--	--	na	1.5E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.5E+01**
Beta and Photon Activity (mrem/yr)	0	--	--	na	4.0E+00	--	--	na	4.0E+00	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**4.0E+00**
Strontium-90	0	--	--	na	8.0E+00	--	--	na	8.0E+00	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**8.0E+00**
Tritium	0	--	--	na	2.0E+04	--	--	na	2.0E+04	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**2.0E+04**
Selenium	0	2.0E+01	5.0E+00	na	1.1E+04	2.0E+01	5.0E+00	na	1.1E+04	--	--	--	--	--	--	--	--	**2.0E+01**	**5.0E+00**	**na**	**1.1E+04**
Silver	0	3.2E-01	--	na	--	3.2E-01	--	na	--	--	--	--	--	--	--	--	--	**3.2E-01**	**--**	**na**	**--**
Sulfate	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
1,1,2,2-Tetrachloroethane[C]	0	--	--	na	1.1E+02	--	--	na	1.1E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.1E+02**
Tetrachloroethylene[C]	0	--	--	na	8.9E+01	--	--	na	8.9E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**8.9E+01**
Thallium	0	--	--	na	6.3E+00	--	--	na	6.3E+00	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**6.3E+00**
Toluene	0	--	--	na	2.0E+05	--	--	na	2.0E+05	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**2.0E+05**
Total dissolved solids	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
Toxaphene [C]	0	7.3E-01	2.0E-04	na	7.5E-03	7.3E-01	2.0E-04	na	7.5E-03	--	--	--	--	--	--	--	--	**7.3E-01**	**2.0E-04**	**na**	**7.5E-03**
Tributyltin	0	4.6E-01	6.3E-02	na	--	4.6E-01	6.3E-02	na	--	--	--	--	--	--	--	--	--	**4.6E-01**	**6.3E-02**	**na**	**--**
1,2,4-Trichlorobenzene	0	--	--	na	9.4E+02	--	--	na	9.4E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**9.4E+02**
1,1,2-Trichloroethane[C]	0	--	--	na	4.2E+02	--	--	na	4.2E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**4.2E+02**
Trichloroethylene [C]	0	--	--	na	8.1E+02	--	--	na	8.1E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**8.1E+02**
2,4,6-Trichlorophenol [C]	0	--	--	na	6.5E+01	--	--	na	6.5E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**6.5E+01**
2-(2,4,5-Trichlorophenoxy) propionic acid (Silvex)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
Vinyl Chloride[C]	0	--	--	na	6.1E+01	--	--	na	6.1E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**6.1E+01**
Zinc	0	3.6E+01	3.6E+01	na	6.9E+04	3.6E+01	3.6E+01	na	6.9E+04	--	--	--	--	--	--	--	--	**3.6E+01**	**3.6E+01**	**na**	**6.9E+04**

Notes:

1. All concentrations expressed as micrograms/liter (ug/l), unless noted otherwise
2. Discharge flow is highest monthly average or Form 2C maximum for Industries and design flow for Municipals
3. Metals measured as Dissolved, unless specified otherwise
4. "C" indicates a carcinogenic parameter
5. Regular WLAs are mass balances (minus background concentration) using the % of stream flow entered above under Mixing Information.
   Antidegradation WLAs are based upon a complete mix.
6. Antideg. Baseline = (0.25(WQC - background conc.) + background conc.) for acute and chronic
   = (0.1(WQC - background conc.) + background conc.) for human health
7. WLAs established at the following stream flows: 1Q10 for Acute, 30Q10 for Chronic Ammonia, 7Q10 for Other Chronic, 30Q5 for Non-carcinogens, Harmonic Mean for Carcinogens, and Annual Average for Dioxin. Mixing ratios may be substituted for stream flows where appropriate.

Metal	Target Value (SSTV)
Antimony	4.3E+03
Arsenic	9.0E+01
Barium	na
Cadmium	2.3E-01
Chromium III	1.4E+01
Chromium VI	6.4E+00
Copper	1.5E+00
Iron	na
Lead	1.4E+00
Manganese	na
Mercury	5.1E-02
Nickel	3.8E+00
Selenium	3.0E+00
Silver	1.3E-01
Zinc	1.4E+01

Note: do not use QL's lower than the minimum QL's provided in agency guidance

Project Review Report

List of threatened and endangered species and wildlife resources known or likely to occur within a **mile radius of (point 38,03,47 77,47,56)** in **109 Louisa, 177 Spotsylvania, Va.** This report compiled on 2/7/2007,3:15:31 PM

Threatened and Endangered Species Occurrences.

Bova Code	Status*	Common Name	Scientific Name	Confirmed	Database(s)
040093	FTST	Eagle, bald	Haliaeetus leucocephalus	Yes	CBC, ObsBook
040129	ST	Sandpiper, upland	Bartramia longicauda	No	BOVA
040292	FSST	Shrike, migrant loggerhead	Lanius ludovicianus migrans	No	BOVA
040293	ST	Shrike, loggerhead	Lanius ludovicianus	Yes	CBC
060121	FC	Kidneyshell, fluted	Ptychobranchus subtentum	No	BOVA
040320	FS	Warbler, cerulean	Dendroica cerulea	No	BOVA
060029	FSSS	Lance, yellow	Elliptio lanceolata	No	BOVA
100248	FS	Fritillary, regal	Speyeria idalia idalia	No	BOVA
010077	SS	Shiner, bridle	Notropis bifrenatus	No	BOVA
040032	SS	Egret, great	Ardea alba egretta	No	BOVA
040034	SS	Heron, tricolored	Egretta tricolor	No	BOVA
040036	SS	Night-heron, yellow-crowned	Nyctanassa violacea violacea	No	BOVA
040094	SS	Harrier, northern	Circus cyaneus	Yes	CBC
040112	SS	Moorhen, common	Gallinula chloropus cachinnans	No	BOVA
040180	SS	Tern, Forsters	Sterna forsteri	No	BOVA
040189	SS	Tern, Caspian	Sterna caspia	No	BOVA
040204	SS	Owl, barn	Tyto alba pratincola	No	BOVA
040262	SS	Nuthatch, red-breasted	Sitta canadensis	Yes	CBC
040264	SS	Creeper, brown	Certhia americana	Yes	CBC
040266	SS	Wren, winter	Troglodytes troglodytes	Yes	CBC
040278	SS	Thrush, hermit	Catharus guttatus	Yes	CBC
040285	SS	Kinglet, golden-crowned	Regulus satrapa	Yes	CBC
040314	SS	Warbler, magnolia	Dendroica magnolia	No	BOVA

040364	SS	Dickcissel	Spiza americana	No	BOVA
040366	SS	Finch, purple	Carpodacus purpureus	Yes	CBC
050045	SS	Otter, northern river	Lontra canadensis lataxina	No	BOVA

*FE=Federal Endangered; FT=Federal Threatened; FC=Federal Candidate; FS=Federal Species of Concern (not a legal status; list maintained by USFWS Virginia Field Office); SE=State Endangered; ST=State Threatened; SS=State Special Concern (not a legal status).

Anadromous Fish Use Reaches Records - No Records found.

Colonial WaterBird (CWB) Survey Records - No Records found.

Threatened and Endangered Species Waters - No Records found.

Summary of Recent Cold Water Stream Survey (CWSS) Reaches
(Click on Reach ID to view complete reach history) - No Records found.

Commonwealth of Virginia Land Holdings

No records found for the search area.

Outfall 001

Discharge from WHTF at Dike 3

Source: This outfall continuously discharges condenser cooling water from the Waste Heat Treatment Facility (WHTF) to Lake Anna at Dike 3. The water is non-contact, once through cooling water withdrawn from Lake Anna. There are 12 internal outfalls that contribute to 001.

Treatment: The retention time in the WHTF is approximately 7.5 days giving the water time to cool.
Sampling Point: Dike 3
Discharges To: Lake Anna
Discharge Volume: 2100 MGD (Average for 2002-2006)

Effluent Screening:
- Effluent data obtained from permit application Form 2C, Attachment A and 2002-2006 DMRs have been reviewed and determined to be suitable for evaluation.
- There have been no exceedances of the established limitations.
- Data reported in Form 2C was analyzed and no pollutants were found to be above the water quality criteria.
- Attachment 8 shows the Water Quality Criteria (WQC) and WLA analyses respectfully.

Pollutants of concern:

- Total Residual Chlorine (TRC): TRC is present from the STP discharge, Outfall 111. An evaluation of the 2002–2006 DMR effluent data shows Total Residual Chlorine to be below the limit.
- Metals: No metals were detected above the water quality criteria. Copper and Nickel were required under the previous permit to be monitored due to toxics data analysis. In Form 2C and Attachment A, Copper and Nickel were present in the effluent above the detection level, but were below the criteria. Copper and Nickel results, 2 ug/L and <5 ug/L respectively, were below the acute criteria of 3.6 ug/L and 56 ug/L, respectively and below the chronic criteria of 2.7 ug/L and 6.3 ug/L, respectively.

Effluent Limitations:

- pH: Water Quality Criteria states that it shall be a minimum value of 6.0 S.U. and a maximum value of 9.0 S.U. No change to pH limitations is proposed, and the pH range of 6.0 S.U. minimum and 9.0 S.U. monthly maximum is given at this outfall. The frequency is increased to 1/W.
- Temperature: Temperature is being added at a frequency of 1/W. The data will be used to better assess the actual temperature of the effluent monitoring at Dike 3.
- Flow at Outfall 001: Weekly flow estimates are required so as to record volume of discharge. The volume shall be estimated based on the height, width and velocity of the water flowing over dike 3.
- Total Residual Chlorine (TRC): The effluent limitations for TRC are based on the water quality criteria for TRC, 0.011 mg/l. This is more stringent than the Steam Electric Power Generating effluent guidelines. Federal Effluent requirements (40 CFR 423.13(b)(1)) state that once through cooling water discharges shall have a maximum TRC value of 0.2 mg/l. The previous permit contained the effluent guideline limit but staff now believes the water quality based limit is the more appropriate. In practice, since the limit is less than the QL for TRC, compliance shall be based on the QL level of 0.1 mg/l.
- Heat Rejection: Heat rejection requirements have been moved to internal outfall 101.

Effluent Limitations/Monitoring Requirements: Outfall 001

Effective Dates: During the period beginning with the permit's effective date and lasting until the expiration date, the permittee is authorized to discharge from Outfall 001 (Discharge from WHTF at Dike 3).

PARAMETER	BASIS FOR LIMITS	DISCHARGE LIMITATIONS				MONITORING REQUIREMENTS	
		Monthly Average	Daily Maximum	Minimum	Maximum	Frequency	Sample Type
Flow (MGD)	N/A	NL	N/A	N/A	NL	1/W	Estimate
pH	3	N/A	N/A	6.0 S.U.	9.0 S.U.	1/W	Grab
Total Residual Chlorine (TRC)	3	0.011mg/l	0.011mg/l	N/A	N/A	1/M	Grab
Temperature (^{o}C)	N/A	NL	NL	N/A	N/A	1/W	IS
Chronic 3-Brood Static Renewal *C. dubia*	3	N/A	N/A	N/A	NL	1/Y	Grab
Chronic 7-Day Static Renewal *P. promelas*	3	N/A	N/A	N/A	NL	1/Y	Grab

The basis for the limitations codes are:	*MGD* =	Million gallons per day	*1/M* = Once every month
1. Federal Effluent Requirements	*N/A* =	Not applicable	*1/W* = Once week
2. Best Professional Judgment	*NL* =	No limit; monitor and report	*1/Y* = Once per every twelve months
3. Water Quality Standards	*S.U.* =	Standard units	*IS* = Immersion & Stabilization

Flow at Outfall 001 shall be estimated based on the height, width and velocity of the water flowing through Dike 3.

Special Conditions Specific to Outfall 001:

Permit Section Part I.C., details the requirements for Toxics Management Program.

The VPDES Permit Regulation at 9 VAC 25-31-210 requires monitoring and 9 VAC 25-31-220.I, requires limitations in the permit to provide for and assure compliance with all applicable requirements of the State Water Control Law and the Clean Water Act. Because of the large volume of discharge of Outfall 001 into Lake Anna, and the potential for contamination in the WHTF, a TMP is warranted. The frequency shall be once per year. Should the effluent be toxic, the permit may be reopened to include a WET limit or other requirements to address toxicity.

Variances/Alternate Limits or Conditions.

The permittee has requested alternative effluent limitations under 316(a). Pursuant to a Study Plan approved by the Board, Virginia Power conducted a 316(a) study in 1984 and 1985 and submitted a 316(a) Demonstration Report on June 24, 1986. The Board has reviewed the study and demonstration and found that effluent limitations more stringent than the thermal limitations included in this permit are not necessary to assure the protection and propagation of a balanced indigenous community of shellfish, fish and wildlife in Lake Anna and the North Anna River downstream of the lake.

Since the 316(a) study, temperature monitoring has been performed each year using a continuous recorder at monitoring stations located in the upper lake to the dam (NAL719ST, NAL719NT, NAL208T, NALINT, NALTHIST, NALBRPTT, NALST10), the lagoons (NADISC1, NAWHTF2, NAWHTF3), and the river (NARIV601). (See Attachment 11)

Staff evaluated temperature data from annual reports for 1994, 1997, and 2000-2006 (See Attachment 11). Data indicates that at various times throughout this period hourly high temperatures exceeded the 32^{o}C water quality criteria in the lake, river and WHTF. Data for this period also indicates the hourly mean temperature in the lake and river did not exceed the 32^{o}C water quality criteria. The hourly mean temperature did exceed the 32^{o}C water quality criteria in the WHTF. During 2002 the area experienced a prolonged drought and critical conditions existed. With the facility at peak production of 100%, the 32^{o}C water quality criteria was exceeded in the summer months of June, July, August, and September, at stations throughout the lake and river.

By letter dated July 5, 2005, the permittee formally stated that conditions have not changed substantially and thereby requested continuation of the 316(a) variance. Based on staff's review of the annual reports, staff believes that the variance should be continued.

Outfall 009

Ground Water, Storm Water, and Backwash from Sand Filters and Reverse Osmosis Units

Source: This intermittent discharge is mostly storm water runoff, backwash cleaning from reverse osmosis units (essentially ultra purified lake water) and groundwater. The outfall discharges effluent to the lake from a settling pond.

Source Breakdown	Flow Frequency	Flow Rate/Volume
Settling Pond	Pumping rate dependent on rainfall. Can go for weeks without pumping, and sometimes pumps for weeks.	0.144 MGD - 0.22 MGD (pumping rate when running)
Storm Water	5 days per week; 12 months per year	0.168 MGD (Long Term Average) 0.252 MGD (Maximum Daily) Duration (in days): Varies.
Backwash from Sand Filters and Reverse Osmosis Units		
Ground Water		
Bearing Cooling Tower Water during maintenance activities	Pump down for maintenance purposes. With new tower, this should be rare, at most once every few years over several days.	250,000 Gal. (with no biocide as pumping occurs following cessation of biocide addition)
Ionics Emergency shower wash after neutralization in holding tank	Rare. Hasn't occurred in past 10 years.	N/A

Treatment: Settling with a retention time > 24hrs. Backwash is neutralized prior to settling pond.
Sampling Point: End of pipe
Discharges To: Lake Anna
Discharge Volume: 0.168 MGD (Average for 2002-2006)

Effluent Screening:
- Effluent data obtained from Form 2C and 2002-2006 DMRs have been reviewed and determined to be suitable for evaluation.
- There have been no exceedances of the established limitations. Data reported in Form 2C was analyzed and Sulfide (as S) and Total Nickel were found to be above the water quality criteria.
- Attachment 8 shows the Water Quality Criteria (WQC) and WLA.

Pollutants of concern:

- Total Suspended Solids (TSS): An evaluation of the 2002–2006 DMR effluent data shows TSS to be below the permit limit.
- Total Dissolved Solids (TDS): Form 2C showed RO rejects contain high concentration of TDS.
- Total Nickel: Form 2C showed total Nickel was 9.0 ug/L. Chronic criteria for dissolved Nickel is 6.3 ug/L at a hardness of 25 mg/L.

Effluent Limitations:
- This outfall discharges effluent to the lake from a settling pond, which receives backwash from reverse osmosis filters and storm water. The effluent limitations for pH are based on the water quality standard. Effluent limitations for other parameters are based on the Best Professional Judgment and are the same as in the previous permit.
- As per the information submitted by the permittee in the previous permit, Outfall 009 is about 200 ft from the intake structure. Due to the nature of the strong circulation pattern resulting from the high volume intake, discharges to the lake from Outfall 009 will be drawn into the intake flow along with the lake water used for cooling. Approximately 2100 MGD of water is circulated in this area. Because of this intense mixing, the TDS and Ni concentrations will quickly dilute well below toxic levels.

- pH: Limits are based on the Water Quality Criteria of 6.0 S.U. to 9.0 S.U.

- Total Suspended Solids (TSS): The limit is based on Best Professional Judgment for performance of a settling pond.

Effluent Limitations/Monitoring Requirements: Outfall 009

Average Flow is 0.168 MGD.
Effective Dates: During the period beginning with the permit's effective date and lasting until the expiration date, the permittee is authorized to discharge from Outfall 009 (Ground Water, Storm Water and Backwash from Sand Filters and Reverse Osmosis Units).

PARAMETER	BASIS FOR LIMITS	DISCHARGE LIMITATIONS				MONITORING REQUIREMENTS	
		Monthly Average	Daily Maximum	Minimum	Maximum	Frequency	Sample Type
Flow (MGD)	NA	NL	N/A	N/A	NL	2/M	Estimate
pH	3	N/A	N/A	6.0 S.U.	9.0 S.U.	2/M	Grab
Total Suspended Solids (TSS)	2	30 mg/L	100 mg/L	N/A	N/A	1/3M	Grab

The basis for the limitations codes are:
1. Federal Effluent Requirements
2. Best Professional Judgment
3. Water Quality Standards

MGD = Million gallons per day
N/A = Not applicable
NL = No limit; monitor and report
S.U. = Standard units
2/M = Twice every month
1/3M = Once every 3 months

The monitoring frequency of 1/3M is consistent with the recommendations found in the Guidance Memo 98-2006.

The quarterly monitoring periods shall be January 1 - March 31, April 1 - June 30, July 1 - September 30 and October 1 - December 31. The DMR shall be submitted no later than the 10th day of the month following the monitoring period (April 10, July 10, October 10 and January 10, respectively).

Special Conditions Specific to Outfall 009: None.

Outfall 013

Turbine Building Sump 1 & 2 and Storm Water

Source: This is an intermittent discharge consisting mainly of storm water runoff. It includes water from sump pumps in the turbine building that are used only for emergency releases and highly purified water from condensate storage tanks. The storm water component is from an area with no industrial activity and no chemical additions. This outfall is an alternate discharge route for the effluent making up the majority of the flow at Outfall 104. In the event of a discharge from Outfall 013, Outfall 104 data shall be submitted to represent Outfall 013.

Source Breakdown	Flow Frequency	Flow Rate/Volume
Discharge for Turbine Building Sumps #1 & #2	Days per week and months per year vary. Has discharged once in past 10 years.	Emergency only. Duration (in days): N/A
Condensate Storage Tanks	Drained to storm system on an as needed basis.	N/A

Treatment: Water flows into a concrete two stage catchment basin before release into Lake Anna.
Sampling Point: At overflow weir
Discharges To: Lake Anna

- Per information submitted by the permittee, Outfall 013 is about 25 ft. from the intake structure. Due to the nature of the strong circulation pattern resulting from the high volume intake, discharges to the lake from Outfall 013 will be drawn into the intake flow along with the lake water used for cooling. Approximately 2100 MGD of water is circulated in this area.

Effluent Limitations/Monitoring Requirements: Outfall 013

Average Flow is 0.0 MGD.
Effective Dates: During the period beginning with the permit's effective date and lasting until the expiration date, the permittee is authorized to discharge from Outfall 013 (Turbine Building Sump #1 & #2 and Storm Water).

PARAMETER	BASIS FOR LIMITS	DISCHARGE LIMITATIONS				MONITORING REQUIREMENTS	
		Monthly Average	Daily Maximum	Minimum	Maximum	Frequency	Sample Type
Flow (MGD)	N/A	NL	N/A	N/A	NL	1/M	Estimate
pH	1,3	N/A	N/A	6.0 S.U.	9.0 S.U.	1/M	Grab
Total Suspended Solids (TSS)	1	30 mg/L	100 mg/L	N/A	N/A	1/M	Grab
Oil and Grease	1	15 mg/L	20 mg/L	N/A	N/A	1/M	Grab

The basis for the limitations codes are:
1. Federal Effluent Requirements
2. Best Professional Judgment
3. Water Quality Standards

MGD = Million gallons per day
N/A = Not applicable
NL = No limit; monitor and report
S.U. = Standard units
1/M = Once every month

Special Conditions Specific to Outfall 013: None.

Outfall 016

Intake Screen Wash Water

Source: This discharge is a low volume, non-process water that consists entirely of lake water. The water is used to wash the traveling screens. Screens are washed based on pressure (?P) across the screen. When debris builds up, screens rotate and are washed with lake water. The basket at the end of the trough collects the debris, and the water is returned to the lake. Intake data will be submitted to represent Outfall 016.

Treatment: Debris removal
Sampling Point: Discharge into basket
Discharges To: Lake Anna
Discharge Volume: 0.156 MGD (Average for 2002-2006)

Effluent Screening:

- Effluent data from Form 2C and 2002-2006 DMRs have been reviewed and determined to be suitable for evaluation.
- Data reported in Form 2C was analyzed and Total Zinc was found to be above the water quality criteria.
- Attachment 8 shows the Water Quality Criteria (WQC) and WLA respectfully.

Pollutants of concern:

- Total Zinc: Form 2C showed Total Zinc was 43.0 ug/L. Acute and chronic criteria for dissolved Zinc are both 36.0 ug/L at a hardness of 25 mg/L. Because the discharge is located at the intake, the effluent will immediately be diluted with the intake water.

Effluent Limitations:

- This outfall is a low volume, non-process discharge consists entirely of lake water. No effluent limits or monitoring are proposed other than flow.

Effluent Limitations/Monitoring Requirements: Outfall 016

Average Flow is 0.156 MGD.
Effective Dates: During the period beginning with the permit's effective date and lasting until the expiration date, the permittee is authorized to discharge from Outfall 016 (Intake Screen Wash Water).

PARAMETER	BASIS FOR LIMITS	DISCHARGE LIMITATIONS				MONITORING REQUIREMENTS	
		Monthly Average	Daily Maximum	Minimum	Maximum	Frequency	Sample Type
Flow (MGD)	N/A	NL	N/A	N/A	NL	1/Y	Estimate

The basis for the limitations codes are:

1. Federal Effluent Requirements
2. Best Professional Judgment
3. Water Quality Standards

MGD = Million gallons per day
N/A = Not applicable
NL = No limit; monitor and report
1/Y = Once every twelve months

Special Conditions Specific to Outfall 016: None.

Outfall 020

Reverse Osmosis Reject

Source: This discharge occurs continuously, but there are times (which are rare, normally during outages when no make-up water is needed and all tanks are full) when it does not occur. It consists of lake water after the reverse osmosis process. Currently, the system isn't chlorinated (potential residual of 0-1ppm free chlorine from sodium hypochlorite used in ionics system), but may be in the future. The system generally increases the order of concentration (3.3x concentration of constituents) of the material in the lake water. Also, this outfall discharges into the incoming cooling water flow just outside the intakes.

Treatment: None

Sampling Point: End of small pipe, where it empties into larger pipe

Discharges To: Lake Anna near intake structure

Discharge Volume: 0.37 MGD (Average for 2002-2006)

Effluent Screening:

- Effluent data from Form 2C and 2002-2006 DMRs have been reviewed and determined to be suitable for evaluation.
- There have been no exceedances of the established limitations. Data reported in Form 2C was analyzed and Total Residual Chlorine, Total Copper, and Total Nickel were found to be above the water quality criteria.
- Attachment 8 shows the Water Quality Criteria (WQC) and WLA.

Pollutants of concern:

- Total Suspended Solids (TSS): An evaluation of the 2002–2006 DMR data shows TSS to be below the limit.
- Chlorine: An evaluation of the 2002–2006 DMR effluent data shows Inst Res Max Chlorine to be below the concentration max of 4.0 mg/L. Form 2C showed Total Residual Chlorine was 400 ug/L.
- Total Copper: Form 2C data showed that Total Copper was 4.0 ug/L. Acute and chronic criteria for Dissolved Copper are 3.6 ug/L and 2.7 ug/L respectively at a hardness of 25 mg/L.
- Total Nickel: Form 2C data showed that Total Nickel was 9.0 ug/L. Chronic criteria for Dissolved Nickel is 6.3 ug/L at a hardness of 25 mg/L.

Effluent Limitations:

- The effluent limitations for this outfall are same as in the previous permit and are based on Best Professional Judgment.
- Outfall 020 is about 25 ft from the intake structure. Due to the nature of the strong circulation pattern resulting from the high volume intake, discharges to the lake from Outfall 020 will be drawn into the intake flow along with the lake water used for cooling. Approximately 2100 MGD of water is circulated in this area.

Effluent Limitations/Monitoring Requirements: Outfall 020

Average Flow is 0.37MGD.

Effective Dates: During the period beginning with the permit's effective date and lasting until the expiration date, the permittee is authorized to discharge from Outfall 020 (Reverse Osmosis Reject).

PARAMETER	BASIS FOR LIMITS	DISCHARGE LIMITATIONS				MONITORING REQUIREMENTS	
		Monthly Average	Daily Maximum	Minimum	Maximum	Frequency	Sample Type
Flow (MGD)	NA	NL	N/A	N/A	NL	2/M	Estimate
pH	3	N/A	N/A	6.0 S.U.	9.0 S.U.	2/M	Grab
Total Suspended Solids (TSS)	2	30 mg/L	100 mg/L	N/A	N/A	1/3M	Grab
Chlorine	2	NL	4.0 mg/L	N/A	N/A	2/M	Grab

The basis for the limitations codes are:

1. Federal Effluent Requirements
2. Best Professional Judgment
3. Water Quality Standards

MGD = Million gallons per day
N/A = Not applicable
NL = No limit; monitor and report
S.U. = Standard units
2/M = Twice every month
1/3M = Once every 3 months

-The monitoring frequency of 1/3M is consistent with the recommendations found in the Guidance Memo 98-2005.

- The quarterly monitoring periods shall be January 1 - March 31, April 1 - June 30, July 1 - September 30 and October 1 - December 31. The DMR shall be submitted no later than the 10th day of the month following the monitoring period (April 10, July 10, October 10 and January 10, respectively).

Special Conditions Specific to Outfall 020: None.

Outfall 021

Reverse Osmosis Drain Line

Source: This discharge is lake water from the reverse osmosis system. Outfall 021 has never been used since installation and is in the permit for emergency use only. It would be used if both nuclear units went offline unexpectedly during freezing weather conditions i.e. in the case where the whole ionic system is down and the line needs to be drained. Intake data will be submitted to represent Outfall 021.

Treatment: None

Sampling Point: Middle of pipe at valve

Discharges To: Lake Anna near intake structure

- Effluent limits are the same as Outfall 016

Effluent Limitations/Monitoring Requirements: Outfall 021

Average Flow is 0.0 MGD.

Effective Dates: During the period beginning with the permit's effective date and lasting until the expiration date, the permittee is authorized to discharge from Outfall 021 (Reverse Osmosis Drain Line).

PARAMETER	BASIS FOR LIMITS	DISCHARGE LIMITATIONS				MONITORING REQUIREMENTS	
		Monthly Average	Daily Maximum	Minimum	Maximum	Frequency	Sample Type
Flow (MGD)	N/A	NL	N/A	N/A	NL	1/M	Estimate

The basis for the limitations codes are:

1. Federal Effluent Requirements
2. Best Professional Judgment
3. Water Quality Standards

MGD = Million gallons per day

N/A = Not applicable

NL = No limit; monitor and report

1/M = Once every month

Special Conditions Specific to Outfall 021: None.

Outfalls 014, 022, 023, 024, 025, and 026
Drainage Areas 2A, 2B, 3, 18, and 25 - Storm Water Only

Storm Water Description:

6 outfalls (014, 022, 023, 024, 025, and 026) were identified as separate storm water only discharges associated with industrial activities as shown below in the Storm Water Drainage Area Characterizations.

3 outfalls (104, 009, and 013 in the reissued permit) were identified as combined process water and storm water discharges and are authorized by the current permit as combined process water and storm water discharges. But the storm waters discharged from these outfalls are not associated with industrial activities.

Storm Water Drainage Area Characterizations: (See map in the application form)

Except as indicated in the individual drainage area characterizations below, all industrial activities and materials at the station are conducted, handled, or stored in enclosures which prevent exposure to storm water or runoff. The majority of the drainage areas have no industrial activity, which includes storage of material, use of pesticides, herbicides, or fertilizers, disposal of significant materials, etc., past or present.

Area 31, 2A, 2B, 3, 18, and 25 were determined to include storm water-only discharges draining vicinities associated with industrial activities and, although those activities are not generally exposed to storm water, were included in the sampling and analysis efforts for this application. These drainage areas are discussed in more detail below.

Storm water discharges which are combined with process discharges are those in the main part of the station which were included in the existing VPDES permit outfalls. These are identified and discussed below in the section regarding "evaluation of other drainage areas." Storm water sampling of these discharges was conducted for the current permit application.

Station herbicide usage is limited to minor spot applications of Roundup, as needed, around the main station buildings and adjacent parking lots and roadways. System herbicide use occurs periodically under transmission lines on the site using Accord, Arsenal, and/or Roundup. No pesticides are used at the station. Controlled amounts of fertilizers are applied twice per year.

Outfalls Covered By This Application:

Area 31 (Outfall 014): Storm water is collected and discharged to Lake Anna via Outfall 014 of the current VPDES permit. Storm water drains the back half of the outside of the turbine building, and no industrial influence occurs at this outfall.

Area 2A (Outfall 022): This is an area of approximately 52 acres, with approximately 7.1 acres of impervious area. Storm water collected in the higher portion to the south, contractor shops, parking lots, and the switch yard flows into a drop grating to a culvert near the northeast corner of the switch yard and discharges into Lake Anna at Outfall 022. The lower, more level portion includes a vehicle maintenance shop, a paint shop, and part of an outdoor equipment lay down area. Storm water runoff from the grassed portions of this area adjacent to the lakeshore is generally sheet flow. Runoff from the graveled lots around the shops and laydown areas is collected in a swale which discharges at the Outfall 022 along with flows from the culvert. The storm water is from an area with no industrial activity and no chemical additions.

Area 2B (Outfall 023): This is a small area of approximately 6 acres. The only impervious area is the 0.09 acre storage building which is used for hazardous waste accumulation, with other miscellaneous storage. This storage building is constructed with a curbed foundation to contain any spillage and to prevent any discharge outside the structure. Storm water collected in the higher portion to the south flows into a culvert under this storage building then discharges into Lake Anna at Outfall 023. Storm water runoff from the grassed portions of this area adjacent to the lake shore is generally sheet flow. The storm water is from an area with no industrial activity and no chemical additions.

Area 3 (Outfall 024): A small drainage area of 9 acres with primarily sheet flow runoff of storm water to Lake Anna. About 0.08 acre is paved and impervious. A portion of the laydown area, shared with Area 2A has runoff through a drop culvert (sample point 024) under the roadway and into Lake Anna at Outfall 024. The storm water is from an area with no industrial activity and no chemical additions.

Area 18 (Outfall 025): This 56 acre drainage area, with 4 acres of impervious area, includes a portion of the warehouse facilities, an outdoor laydown area, and some small utility buildings. Storm water from the northern portion of this drainage area is conveyed under the paved roadway via two culverts. The culvert to the west carries the smaller amount of storm water flow which drains from opened, grassed fields with no industrial activity. The culvert to the east was chosen as

the sample point for Area 18 because it carries the collected drainage from the larger portion of the area, from the warehouse and laydown facilities, and would be more likely to contain any contaminants. Outfall 025 discharges storm water from this drainage into the WHTF. The storm water is from an area with no industrial activity and no chemical additions.

Area 25 (Outfall 026): This 61 acre drainage area has no impervious surface area. In the northern portion of Area 25, there is a site (labeled "slabs" on map) used for temporary exposed storage of discarded miscellaneous material such as large concrete "dead weight" blocks for crane weight testing, small movable buildings, etc. This portion of the drainage area has runoff through a culvert under the roadway and into Lake Anna at Outfall 026. This culvert was selected as the sample point for Area 25; no industrial activities occur downstream. As with other lakeside areas, sections adjacent to the shoreline, north of the graveled roadway have sheet flow runoff of storm water. The storm water is from an area with no industrial activity and no chemical additions.

Effluent Screening:

- Effluent data from Form 2F and 2002 DMRs are suitable for evaluation.
- Attachment 8 shows the Water Quality Criteria (WQC) and WLAs.
  - Outfall 022
    - DMR data for the rain event date of September 26, 2002 showed total recoverable Fe was 3.04 mg/L.
    - Form 2F showed:
      - Total Dissolved Solids: The effluent contains concentrated cations and anions.
      - Total Cadmium: Total Cadmium was 0.4 ug/L.
      - Total Copper: Total Copper was 12 ug/L.
      - Total Lead: Total Lead was 7 ug/L.
      - Total Zinc: Total Zinc was 190 ug/L.
  - Outfall 023
    - DMR data for the rain event date of September 26, 2002 showed total recoverable Fe was 0.79 mg/L.
    - Form 2F showed:
      - Total Dissolved Solids: The effluent contains concentrated cations and anions.
      - Total Cadmium: 3.3 ug/L.
      - Total Copper: 78 ug/L,
      - Total Lead: 46 ug/L
      - Total Nickel: 19.0 ug/L
      - Total Zinc: 2550 ug/L
  - Outfall 024
    - DMR data for the rain event date of September 26, 2002 showed total recoverable Fe was 31.08 mg/L
    - Form 2F showed:
      - Total Dissolved Solids: The effluent contains concentrated cations and anions.
      - Total Cadmium: 1.3 ug/L
      - Total Copper: 50 ug/L
      - Total Lead: 43 ug/L
      - Total Nickel: 22 ug/L
      - Total Silver: 1.0 ug/L
      - Total Zinc: 414 ug/L
  - Outfall 025
    - DMR data for the rain event date of September 26, 2002 showed that total recoverable Fe was 1.22 mg/L
    - Form 2F showed:
      - Total Dissolved Solids: The effluent contains concentrated cations and anions.
      - Total Cadmium: 0.6 ug/L
      - Total Copper: 7 ug/L,
      - Total Lead: 4 ug/L
      - Total Zinc: 200 ug/L
  - Outfall 026
    - DMR data for the rain event date of September 26, 2002 showed that total recoverable Fe was 18.14 mg/L
    - Form 2F showed:
      - Total Cadmium: 0.9 ug/L
      - Total Lead: 26 ug/L
      - Total Zinc: 354 ug/L

Effluent Limitations:
No monitoring is required. Monitoring required by Form 2F suffices for these discharges.

Evaluation Of Other Drainage Areas:
Area 1: All storm water drainage is into the settling pond which discharges via Outfall 009 of the current VPDES permit.

Areas 4, 6 ,7, 8, 9: Predominantly impervious areas with administrative buildings, enclosed storage facilities, a cooling tower for bearing cooling water (in Area 4) and parking lots. No industrial activities or materials exposed to storm water. No storm waters with pollutants associated with industrial activity are expected to be discharged from these areas. Storm water discharges flow into Lake Anna.

Area 5: A small area with sheet flow drainage to Lake Anna. The only activity in this area is the main sewage treatment plant, which discharges into the discharge canal via Outfall 111.

Areas 10 and 11: Predominantly impervious areas with administrative buildings, enclosed storage facilities, and parking lots. No industrial activities or materials exposed to storm water. No storm waters with pollutants associated with industrial activity are expected to be discharged from these areas. Storm water drainage is into the discharge canal.

Area 12: No industrial activity exposed to storm water. Drains into the discharge canal.

Area 13: Includes a portion of the warehouse area and maintenance shops. No industrial activity exposed to storm water. Drains into the discharge canal.

Area 14: A wooded area with some training buildings, recreational facilities, parking lots, roadways, a helicopter pad, and grassed areas in the northernmost section. No industrial activity. Drainage is into Lake Anna.

Area 15: A predominantly natural, wooded area with an instrument laboratory and small storage facilities. No industrial activity. Drainage is into Lake Anna.

Area 16: An area of generally sheet flow drainage into the discharge canal of Lake Anna. The area included recreational facilities, a security training facility with a firing range, parking lots, roadways, wooded areas, and grassed areas. No industrial activity.

Area 17: This area includes a portion of the warehouse facilities. No storm waters with pollutants associated with industrial activity are expected to be discharged from this area. Storm water drainage is primarily into the WHTF with some sheet flow along the discharge canal.

Area 19: This area is mostly a natural, wooded area with a grassed portion in the northern section above the roadway. This section includes a storage structure for retired steam generators which is totally enclosed with no exposure to storm water. No industrial activity. The spent nuclear fuel storage facility is presently under construction in this area.

Area 20: This area is mostly a natural, wooded area which includes the North Anna Nuclear Information Center (NANIC) in the northern section adjacent to the roadway. No industrial activity.

Area 24: This area is mostly a natural, wooded area which includes a landfill and a borrow pit in the northern portion. The landfill receives only sandblast materials, gravel, soil, and broken concrete and is not used for disposal of other wastes. An area adjacent to the landfill is used for the temporary storage of logs and mulch. No industrial activity.

Area 21, 22, 23, 26, 27, 28, and 29: These are wooded, undisturbed areas with natural drainage. No industrial activity.

Area 30: Storm water at the main portion of the station encompassing the major components is collected and discharged to the discharge canal via Outfall 104 of the current VPDES permit.

Area 32: Storm water is collected and discharged to Lake Anna via Outfall 013 of the current VPDES permit.

Exclusion Boundary: The Exclusion Boundary marks an established zone of owner control around the nuclear power units and was chosen as the limit of the area of consideration for this application. Although Virginia Power owns considerable amounts of property outside this boundary, there are no industrial activities or other sources of industrial storm water contamination outside of those discussed above.

Effluent Limitations/Monitoring Requirements: Outfalls 014, 022, 023, 024, 025, and 026

Effective Dates: During the period beginning with the permit's effective date and lasting until the expiration date, the permittee is authorized to discharge from Outfalls 014, 022, 023, 024, 025, and 026 (Drainage Areas 31, 2A, 2B, 3, 18, and 25 - Storm Water Only).

-No monitoring is required. Monitoring required by Form 2F suffices for these discharges.

Special Conditions Specific to Outfalls 014, 022, 023, 024, 025, and 026:

Storm Water Management Requirement.

Storm Water Management requirements are derived from the VPDES General Permit for discharges of storm water associated with industrial activity, 9 VAC 25-151-10 et seq. VPDES Permit Regulation, 9 VAC 25-31-220 K, requires use of Best Management Practices where applicable to control or abate the discharge of pollutants where numeric effluent limits are infeasible or the practices are necessary to achieve effluent limit or to carry out the purpose and intent of the Clean Water Act and State Water Control Law. Required for all Steam Electric Power Plant with storm water discharges associated with industrial activities.

Outfall 101
Condenser Cooling Water (Internal Outfall)

Source: This outfall continuously discharges condenser cooling water to the discharge canal which then enters the Waste Heat Treatment Facility (WHTF). The water is non-contact, once through cooling water withdrawn from Lake Anna. Discharge is based on volume taken at intake for once through cooling water.

Outfall Description: Under the current permit, heat rejection is limited and reported under Outfall 001. Outfall 001 is located at Dike 3 where water from the Waste Heat Treatment Facility (WHTF) enters Lake Anna. Retention time in the WHTF is approximately 7.5 days. Internal Outfall 101 is being established to better facilitate the reporting of heat rejection and to reflect the fact that the heat rejection limit does not account for heat removed from the WHTF.

Treatment: None. The WHTF dissipates the heat prior to discharge through Outfall 001.

Sampling Point: Flow shall be recorded at the intake and temperature shall be recorded at both intake and outfall.

Discharges To: Discharge canal to the WHTF.

Effluent Screening:

- Effluent data is not available for this particular outfall as it is being established with this reissuance. However, an evaluation of the 2002–2006 DMR effluent data for heat rejection (previously monitored at Outfall 001) shows all heat rejection values reported to be below the permit limit.

Effluent Limitations:

- Temperature: Monitoring of temperature at the inlet waterbox and temperature at the outlet waterbox is being added at a frequency of 1/D.
- Flow at Outfall 101: Weekly flow estimates are required so as to record volume of discharge.
- Heat Rejection Limit: The parameter "Heat Rejection" is defined as the rate of heat transfer from a unit's condenser to its circulating water system. In general, it is the amount of energy (heat) produced minus the amount converted to electricity. For most electrical generation facilities it is approximately 2/3 of the heat generated to produce the steam to create the electricity. It is calculated directly by conservation of mass and energy either across the circulating water system (condenser tub side) or from the turbine exhaust to the hotwell (condenser shell side). Heat Rejection is measured in BTU/Hour.

  The heat rejection to the WHTF is based on the design efficiency of the power plant, approximately 13.3E9 BTU/hr with both units in operation. The heat rejection calculated for the permit limit is based on 2% above this value so as to account for normal plant performance variations. The calculation for the limit is as follows:

  Heat Rejection Rate = (NSSS Unit Output - Gross Electric Output) (conv factor) (2 units)
  = (2968 MWt / unit – 988.45 MWt / unit) (3.4192E6 BTU/MW/hr) (2 units)
  = 13.537E9 BTU / hr

  The Nuclear Steam Supply System (NSSS) rating for the power plant is 2910 MWt. A 2% margin is applied above the rating of 2910 MWt to account for instrument measurement uncertainty thus yielding a rating of 2968 MWt . The rating is based on a circulating water temperature of 95°F. The NSSS rating recognizes the total amount of heat produced in the steam system and is the sum of the electrical energy produced plus the waste heat that has not been converted to electricity. The efficiency at which the station can generate electrical energy is primarily dependent upon the temperature and pressure of the steam generated and directly affects the amount of energy lost as waste heat to the environment. When a unit is operating at a specific load and at a specific efficiency, the waste heat load remains virtually constant.

  The value of 13.54E9 BTU/hr is the limit originally assigned to the facility in the 401certification issued in 1973 and is what was used in part to design (size) the WHTF. In August 1986, the facility received a license amendment from the Nuclear Regulatory Commission (NRC) to increase the generating capacity at the North Anna Power Station by 4.2%. The rated core power for each unit was increased from 2775 MWt to 2893 MWt. The project was specifically assessed in the 1986 Section 316(a) Demonstration submitted to DEQ related to the thermal discharge study. While the uprate may be considered a change in actual operating parameters, the 1986 NRC approval for the uprate indicates that their approval is made without violating any design criteria or safety limits. The design parameters have not changed since the operation of the station began. The operating parameters have changed to move closer to the design parameters approved by NRC. As such, the heat rejection limit is carried forward. Additionally, there have been no water quality problems noted with the heat leaving when this requirement was in place at Outfall 001.

- Heat Rejection Calculation: Monthly maximum heat rejection is currently reported on the discharge monitoring report (DMR) for Outfall 001. Heat rejection shall be calculated using the following equation and shall be reported on the DMR for Outfall 101:

$$Q = \frac{C_p m(?T)}{24 \text{ hours}}$$

Where Q = Heat Rejection, BTU/Hour
C_p = Heat Capacity (Specific Heat) of pure water
= 1.0 BTU/pound ^oF
m = mass of water
= flow rate (MGD) x specific gravity of pure water
= flow rate (MGD) x 8.34 pounds/gallon
? T = temperature at outlet condenser waterbox – temperature at inlet condenser waterbox, ^oF

Effluent Limitations/Monitoring Requirements: Outfall 101

Average Flow is 2100 MGD.
Effective Dates: During the period beginning with the permit's effective date and lasting until the expiration date, the permittee is authorized to discharge from Outfall 101 (Condenser Cooling Water to discharge canal).

PARAMETER	BASIS FOR LIMITS	DISCHARGE LIMITATIONS				MONITORING REQUIREMENTS	
		Monthly Average	Daily Maximum	Minimum	Maximum	Frequency	Sample Type
Flow (MGD)(1)	N/A	NL	N/A	N/A	NL	1/D	Calculated and Recorded
Temperature at Inlet Condenser Waterbox (^oF)	N/A	NL	NL	N/A	N/A	1/D	Recorded
Temperature at Outlet Condenser Waterbox (^oF)	N/A	NL	NL	N/A	N/A	1/D	Recorded
Heat Rejected (10^9 BTU/Hr)(2)	2,3	N/A	N/A	N/A	13.54	1/D	Calculated

The basis for the limitations codes are:
1. Federal Effluent Requirements
2. Best Professional Judgment
3. Water Quality Standards

MGD = Million gallons per day
N/A = Not applicable
NL = No limit; monitor and report
1/D = Once per day

(1) The value reported as the daily maximum flow for the report period shall be the intake flow rate which occurred on the day that the maximum heat rejected was calculated from Units 1 and/or 2.

(2) Heat rejected rate submitted monthly shall be a calculation of the maximum heat directed to the waste heat treatment facility from Units 1 and/or 2. Calculations are to be included with the monthly DMR

Special Conditions Specific to Outfall 101: None

Outfall 103
Process Waste Clarifier

Source: This discharge includes intermittent low volumes of steam generator blowdown, package boiler blowdown (not currently in use), mat sump system discharge, ion exchanger waste and intermittent blowdown of the Service Water Reservoir.

Source Breakdown	Flow Frequency	Flow Rate/Volume
Process Waste Clarifier	Runs approx. 50% of the time.	0.359 MGD (when running)
Steam Generator Blowdown	Low volume. Only used during unit shut down and start up (every 18 mo) or during maintenance or problems with normal high volume blowdown (several times per year at several weeks each time).	0.043 MGD (per steam generator – 3 each unit) 0.26 MGD (Max. total)
Package Boiler Blowdown	Boilers have not been used for over 10 years. No usage anticipated.	N/A
Mat Sump System	Pumps ground water from around containment below grade. Relatively constant, low volume.	N/A
Ion Exchange Waste	Radioactive water from primary leaks, component cooling, maintenance, etc. Goes through ion exchange to remove radioactivity. Relatively constant.	N/A
Service Water System Blowdown (intermittent)	Intermittent, frequency not known.	N/A

Treatment: Discharges collect in holding tank and release to circulating tunnel and then to cooling water outfall.
Sampling Point: Clarifier building sink
Discharges To: Discharge Canal
Discharge Volume: 0.359 MGD (Average for 2002-2006)

Effluent Screening:
- Effluent from Form 2C and 2002-2006 DMRs are suitable for evaluation.
- There have been no exceedances of the established limitations. Data reported in Form 2C was analyzed and Sulfide, total Cadmium, total Copper, total Lead, total Nickel, and total Zinc were found to be above the water quality criteria.
- Attachment 8 shows the Water Quality Criteria (WQC) and WLA.

Pollutants of concern:

- Total Suspended Solids (TSS): An evaluation of the 2002–2006 DMR data shows TSS to be below the limit.
- Oil and Grease (O&G): An evaluation of the 2002–2006 DMR data shows O&G to be below the limit.
- Total Dissolved Solids (TDS): Form 2C showed the effluent contains concentrated cations and anions.
- Total Cadmium: Form 2C showed total Cadmium was 26.3 ug/L.
- Total Copper: Form 2C showed total Copper was 42.4 ug/L
- Total Lead: Form 2C showed total Lead was 7.87 ug/L.
- Total Nickel: Form 2C showed total Nickel was 19.0 ug/L
- Total Zinc: Form 2C showed total Zinc was 303.0 ug/L.

Effluent Limitations:
-This internal outfall is considered as "low volume waste sources" under the Steam Electric Power Generating guidelines. The effluent limitations for this outfall are based on Federal Effluent Guidelines. The above concentrations do not pose any reasonable threats to water quality criteria since they are internal outfalls.

- pH: 6.0 S.U. – 9.0 S.U. based on Water Quality
- Total Suspended Solids (TSS): The limit for TSS is based on Federal Effluent Guidelines.

- Oil and Grease (O&G): The limit for O&G is based on Federal Effluent Guidelines.

Effluent Limitations/Monitoring Requirements: Outfall 103

Average Flow is 0.359 MGD.
Effective Dates: During the period beginning with the permit's effective date and lasting until the expiration date, the permittee is authorized to discharge from Outfall 103 (Process Waste Clarifier).

PARAMETER	BASIS FOR LIMITS	DISCHARGE LIMITATIONS				MONITORING REQUIREMENTS	
		Monthly Average	Daily Maximum	Minimum	Maximum	Frequency	Sample Type
Flow (MGD)	N/A	NL	N/A	N/A	NL	1/Y	Estimate
pH	1	N/A	N/A	6.0 S.U.	9.0 S.U.	1/Y	Grab
Total Suspended Solids (TSS)	1	30 mg/L	100 mg/L	N/A	N/A	1/Y	Grab
Oil and Grease	1	15 mg/L	20 mg/L	N/A	N/A	1/Y	Grab

The basis for the limitations codes are:
1. Federal Effluent Requirements
2. Best Professional Judgment
3. Water Quality Standards

MGD = Million gallons per day
N/A = Not applicable
NL = No limit; monitor and report
S.U. = Standard units
1/Y = Once every twelve months

Special Conditions Specific to Outfall 103:

pH Monitoring for Internal Outfalls.

The internal outfalls 103, 104, 105, 108, 109, 110, 112, and 113 discharge into an internal discharge canal that then discharges into the waste heat treatment facility (3 lagoons) and then discharges to Lake Anna via Outfall 001. The huge quantity of water in the internal discharge canal (about 2000 MGD) provides a very significant assimilative ability for small discharges from these internal outfalls. Also, as per the memo from Fred Holt, OWRM, dated May 3, 1990 (Steam/Electric Permits), the technology limits for pH need only be met at the point of final discharge. Since pH for all these internal outfalls are based upon technology limit and the violation of water quality standard is not expected, the pH monitoring point for these internal outfalls is redefined to the cooling water discharge canal.

Outfall 104

Turbine Sumps 1, 2 and 3 and Storm Water

Source: This discharge consists of storm water runoff, turbine building sump water via low volume sump pumps (primary release path), turbine building sump 3 water via high volume sump pumps, drainage from the main and emergency condensate tanks, and fire water system flushing and uncontaminated storm water from containment for above ground fuel oil tank (1-FO-TK-1) to the WHTF via the discharge canal. This discharge was previously approved to represent Outfalls 013. The storm water component is from an area with no industrial activity.

Source Breakdown	Flow Frequency	Flow Rate/Volume
Oil/Water Separator	Industrial outflow primarily from turbine building sumps.	0.271 MGD (Long Term Average) 0.432 MGD (Maximum)
Storm Water	Intermittent.	N/A
Condensate Storage Tanks	Drained to storm system on an as needed basis.	N/A
AST Containment	Released to storm system on an as needed basis	N/A
Turbine Building Sumps	Low volume discharge pumps and one high volume emergency use only turbine building sump #3. Turbine sumps collect non-radioactive system leaks, condensation, equipment maintenance, etc. and go through oil/water separator. Continuous flow.	N/A
Service Water (Fire Water) Reservoir Line Drains	Intermittent flow, system maintenance, several times per year. Infrequent.	Several hundred gal.

Treatment: Mechanical oil/water separator
Sampling Point: At overflow weir
Discharges To: Discharge Canal
Discharge Volume: 0.271 MGD (Average for 2002-2006)

Effluent Screening:
- Data from Form 2C and 2002-2006 DMRs are suitable for evaluation.
- There have been no exceedances of the established limitations due to no discharge. Data in Form 2C was analyzed and Ammonia, Sulfide, total Copper, and total Zinc were found to be above the water quality criteria.
- Attachment 8 shows the Water Quality Criteria (WQC) and WLA.

Pollutants of concern:

- Total Suspended Solids (TSS): An evaluation of the 2002–2006 DMR effluent data shows TSS to be below the limit.
- Oil and Grease (O&G): An evaluation of the 2002–2006 DMR effluent data shows O&G to be below the limit.
- Ammonia: Form 2C showed total Ammonia was 19.2 mg/L
- Total Dissolved Solids (TDS): Form 2C showed the effluent contains concentrated cations and anions.
- Total Copper: Form 2C showed total Copper was 25.0 ug/L.
- Total Zinc: Form 2C showed total Zinc was 412.0 ug/L.

Effluent Limitations:

-This internal outfall is considered as "low volume waste sources" under the Steam Electric Generating guidelines. The effluent limitations for this outfall are based on the Federal Effluent Guidelines and are the same as in the previous permit.

- pH*:* Water Quality Criteria states that it shall be a minimum value of 6.0 S.U. and a maximum value of 9.0 S.U. No change to pH limitations is proposed, and the pH range of 6.0 S.U. minimum and 9.0 S.U. monthly maximum is given at this outfall.

- Total Suspended Solids (TSS): The limit for TSS is based on Federal Effluent Guidelines and is the same as in the previous permit.

- Oil and Grease (O&G): The limit for Oil and Grease is based on Federal Effluent Guidelines and is the same as in the previous permit.

Effluent Limitations/Monitoring Requirements: Outfall 104

Average Flow is 0.271 MGD.
Effective Dates: During the period beginning with the permit's effective date and lasting until the expiration date, the permittee is authorized to discharge from Outfall 104 (Oil/Water Separator & Storm Water).

PARAMETER	BASIS FOR LIMITS	DISCHARGE LIMITATIONS				MONITORING REQUIREMENTS	
		Monthly Average	Daily Maximum	Minimum	Maximum	Frequency	Sample Type
Flow (MGD)	N/A	NL	N/A	N/A	NL	1/Y	Estimate
pH	1	N/A	N/A	6.0 S.U.	9.0 S.U.	1/Y	Grab
Total Suspended Solids (TSS)	1	30 mg/L	100 mg/L	N/A	N/A	1/Y	Grab
Oil and Grease	1	15 mg/L	20 mg/L	N/A	N/A	1/Y	Grab

The basis for the limitations codes are:
1. Federal Effluent Requirements
2. Best Professional Judgment
3. Water Quality Standards

MGD = Million gallons per day
N/A = Not applicabl
NL = No limit; monitor and report
S.U. = Standard units
1/Y = Once every twelve months

Special Conditions Specific to Outfall 104:

pH Monitoring for Internal Outfalls.

Internal outfalls 103, 104, 105, 108, 109, 110, 112, and 113 discharge into an internal discharge canal that then discharges into a waste heat treatment facility (3 lagoons) and then discharges to Lake Anna via Outfall 001. The huge quantity of water in the internal discharge canal (about 2000 MGD) provides a very significant assimilative ability for small discharges from these internal outfalls. Also, as per the memo from Fred Holt, OWRM, dated May 3, 1990 (Steam/Electric Permits), the technology limits for pH need only be met at the point of final discharge. Since pH for all these internal outfalls are based upon technology limit and the violation of water quality standard is not expected, the pH monitoring point for these internal outfalls is redefined to the cooling water discharge canal.

Outfall 105
Bearing Cooling Tower Blowdown

Source: This discharge is the blowdown from the cooling towers. The blowdown controls the water chemistry in the system intermittently when either of the units is operating.

Source Breakdown	Flow Frequency	Flow Rate/Volume
Bearing Cooling Tower Blowdown	Blowdown of the system is continuous except for about 1 week per quarter. Discharge is 6 days per week at 12 months per year.	0.070 MGD (Long Term Average) Duration (in days): approx. 30
Lake to Lake Operation for BCS (intermittent)	Normally through Outfall 107.	17.3 MGD (Maximum Daily)
Strainer Blowdown/Maintenance	Strainer blowdown operates on pressure (?P). Maintenance infrequent.	unknown (insignificant)

Treatment: None
Sampling Point: Sample tap at turbine bldg basement
Discharges To: Discharge Canal
Discharge Volume: 0.070 MGD (Average for 2002-2006)

Effluent Screening:
- Data from Form 2C and 2002-2006 DMRs are suitable for evaluation.
- There have been no exceedances of the established limitations. Data in Form 2C was analyzed and total Copper, total Nickel, and total Zinc were found to be above the water quality criteria.
- Attachment 8 shows the Water Quality Criteria (WQC) and WLA.

Pollutants of concern:
- Free Available Chlorine: An evaluation of the 2002–2006 DMR data shows Chlorine to be below the limit.
- Total Chromium: An evaluation of the 2002–2006 DMR effluent data shows total Chromium to be below the limit.
- Total Copper: Form 2C showed total Copper was 62.0 ug/L.
- Total Nickel: Form 2C showed total Nickel was 27.0 ug/L
- Total Zinc: Form 2C showed total Zinc was 974.0 ug/L.

Effluent Limitations:
- This internal outfall is considered as "cooling tower blowdown" under the Steam Electric Generating guidelines. The effluent limitations for this outfall are based on the Federal Effluent Guidelines. The limits are the same as in the previous permit.

- pH: 6.0 S.U.-9.0 S.U.
- Free Available Chlorine: The limit for Inst Res Max Chlorine is based on Federal Effluent Guidelines.
- Total Chromium: The limit for total Chromium is based on Federal Effluent Guidelines.
- Total Zinc: The limit for total Zinc is based on Federal Effluent Guidelines.
- 126 Priority Pollutants Except Zinc & Chromium: The limit for 126 Priority Pollutants is based on Federal Effluent Guidelines and is the same as in the previous permit.; non-detectable.

Effluent Limitations/Monitoring Requirements: Outfall 105

Average Flow is 0.070 MGD.
Effective Dates: During the period beginning with the permit's effective date and lasting until the expiration date, the permittee is authorized to discharge from Outfall 105 (Bearing Cooling Tower Blowdown).

PARAMETER	BASIS FOR LIMITS	DISCHARGE LIMITATIONS				MONITORING REQUIREMENTS	
		Monthly Average	Daily Maximum	Minimum	Maximum	Frequency	Sample Type
Flow (MGD)	N/A	NL	N/A	N/A	NL	1/M	Estimate
pH	1	N/A	N/A	6.0 S.U.	9.0 S.U.	1/M	Grab
Free Available Chlorine	1	0.2 mg/L	0.5 mg/L	N/A	N/A	1/M	Grab
Total Chromium	1	0.2 mg/L	0.2 mg/L	N/A	N/A	1/3M	Grab
Total Zinc	1	1.0 mg/L	1.0 mg/L	N/A	N/A	1/3M	Grab
126 Priority Pollutants Except Zinc & Chromium	1	ND	ND	N/A	N/A	1/3M	Grab

The basis for the limitations codes are:
1. Federal Effluent Requirements
2. Best Professional Judgment
3. Water Quality Standards

MGD = Million gallons per day
N/A = Not applicable
NL = No limit; monitor and report
S.U. = Standard units
ND = No detectable amount by the analytical methods in 40 CFR Part 136

1/M = Once every month
1/3M = Once every 3 months

-The monitoring frequency of 1/3M is consistent with the recommendations found in the Guidance Memo 98-2005.

- The quarterly monitoring periods shall be January 1 - March 31, April 1 - June 30, July 1 - September 30 and October 1 - December 31. The DMR shall be submitted no later than the 10th day of the month following the monitoring period (April 10, July 10, October 10 and January 10, respectively).

Special Conditions Specific to Outfall 105:

Chlorine Discharge From Cooling Tower.
Per 40 CFR 423.

Additional Instructions Regarding 126 Priority Pollutants.
Per 40 CFR 423. The permittee may submit engineering calculations to show compliance.

pH Monitoring for Internal Outfalls.
The internal outfalls 103, 104, 105, 108, 109, 110, 112, and 113 discharge into an internal discharge canal that then discharges into a waste heat treatment facility (3 lagoons) and then discharges to Lake Anna via Outfall 001. The huge quantity of water in the internal discharge canal (about 2000 MGD) provides a very significant assimilative ability for small discharges from these internal outfalls. Also, as per the memo from Fred Holt, OWRM, dated May 3, 1990 (Steam/Electric Permits), the technology limits for pH need only be met at the point of final discharge. Since pH for all these internal outfalls are based upon technology limit and the violation of water quality standard is not expected, the pH monitoring point for these internal outfalls is redefined to the cooling water discharge canal.

Outfall 107

Bearing Cooling System Discharge – Lake to Lake Operation

Source: This outfall is not currently in use. If a discharge were to occur, it would be temporary when the bearing cooling tower is valved off for maintenance work. Should it occur, lake water would pass through the bearing cooling system, bypass the cooling tower, and go straight to the WHTF. No treatment chemicals are used.

Source Breakdown	Flow Frequency	Flow Rate/Volume
Bearing Cooling System Discharge	Primary discharge for Lake to Lake operation. But this is emergency use only for tower maintenance. Expected use is once per year with untreated lake water. Days per week and months per year vary.	2.5 MGD (Long Term Average) 18.0 MGD (Maximum Daily) Duration (in days): approx. 30
Lake to Lake Operation for BCS (intermittent)		
Continuous Blowdown		

Treatment: There is no treatment
Sampling Point: Sample tap at turbine building basement
Discharges To: Discharge Canal
- This internal outfall is not addressed by Steam Electric Power Generating Guidelines.

Effluent Limitations/Monitoring Requirements: Outfall 107

Average Flow is 2.5 MGD.
Effective Dates: During the period beginning with the permit's effective date and lasting until the expiration date, the permittee is authorized to discharge from Outfall 107 (Bearing Cooling System Discharge – Lake to Lake Operation).

PARAMETER	BASIS FOR LIMITS	DISCHARGE LIMITATIONS				MONITORING REQUIREMENTS	
		Monthly Average	Daily Maximum	Minimum	Maximum	Frequency	Sample Type
Flow (MGD)	N/A	NL	N/A	N/A	NL	1/Y	Estimate
Total Residual Chlorine	2	NL	4.0 mg/L	N/A	N/A	1/Y	Grab

The basis for the limitations codes are:
1. Federal Effluent Requirements
2. Best Professional Judgment
3. Water Quality Standards

MGD = Million gallons per day.
N/A = Not applicable.
NL = No limit; monitor and report.
1/Y = Once every twelve months

Special Conditions Specific to Outfall 107: None.

Outfall 108

Service Water Overflow

Source: This outfall is manually operated with a valve and is used intermittently to control the level of the Service Water Reservoir as necessary. Outfall 108 is substantially identical to Outfalls 114 and 115.

Source Breakdown	Flow Frequency	Flow Rate/Volume
Service Water Overboard Overflow	Used to reduce level of service water reservoir i.e. for long periods of heavy rain such tropical storms, etc. rarely used.	0.537 MGD (Long Term Average) Duration (in days): approx. 30
Batch Blowdown (intermittent)		13 MGD
Straight-through cooling water (intermittent)	Lake to lake emergency only. Has not been used in over 20 years.	14.1 MGD (Maximum Daily)
Header maintenance	Maintenance occurs approx. once per quarter to drain header.	0.15 MGD

Treatment: None
Sampling Point: Sample tap at turbine building basement
Discharges To: Discharge Canal
Discharge Volume: 0.537 MGD (Average for 2002-2006)

Effluent Screening:
- Data from Form 2C and 2002-2006 DMRs are suitable for evaluation.
- There have been no exceedances of the established limitations. Data reported in Form 2C were analyzed and no pollutants were found to be above the water quality criteria.

Effluent Limitations:
- This internal outfall is not addressed by Steam Electric Power Generating Guidelines. The effluent limitations for this outfall are same as in the previous permit and are based on Best Professional Judgment.

Effluent Limitations/Monitoring Requirements: Outfall 108

Average Flow is 0.537 MGD.
Effective Dates: During the period beginning with the permit's effective date and lasting until the expiration date, the permittee is authorized to discharge from Outfall 108 (Service Water Overflow).

PARAMETER	BASIS FOR LIMITS	DISCHARGE LIMITATIONS				MONITORING REQUIREMENTS	
		Monthly Average	Daily Maximum	Minimum	Maximum	Frequency	Sample Type
Flow (MGD)	N/A	NL	N/A	N/A	NL	1/Y	Estimate
pH	2	N/A	N/A	6.0 S.U.	9.0 S.U.	1/Y	Grab

The basis for the limitations codes are:
1. Federal Effluent Requirements
2. Best Professional Judgment
3. Water Quality Standards

MGD = Million gallons per day
N/A = Not applicable
NL = No limit; monitor and report
S.U. = Standard units
1/Y = Once every twelve months

Special Conditions Specific to Outfall 108:

pH Monitoring for Internal Outfalls.

Internal outfalls 103, 104, 105, 108, 109, 110, 112, and 113 discharge into an internal discharge canal that then discharges into a waste heat treatment facility (3 lagoons) and then discharges to Lake Anna via Outfall 001. The huge quantity of water in the internal discharge canal (about 2000 MGD) provides a very significant assimilative ability for small discharges from these internal outfalls. Also, as per the memo from Fred Holt, OWRM, dated May 3, 1990 (Steam/Electric Permits), the technology limits for pH need only be met at the point of final discharge. Since pH for all these internal outfalls are based upon technology limit and the violation of water quality standard is not expected, the pH monitoring point for these internal outfalls is redefined to the cooling water discharge canal.

Outfall 109
Hot Well Drain Unit 1

Source: This intermittent outfall was previously approved to represent Outfall 110 (Hot Well Drain Unit #2), relatively high-purity condensate water, with small concentrations of corrosion chemicals. The drains are normally used once per 18 months, on alternating schedules, during maintenance shutdowns of the respective units. To obtain a representative sample, this must be sampled during use (maintenance shutdown).

Source Breakdown	Flow Frequency	Flow Rate/Volume
Hot Well Drains Unit 1	One day per outage at one month per every 18 months.	0.121MGD (Long Term Average) 0.25 MGD (Maximum Daily) Duration (in days): 1

Treatment: None
Sampling Point: Hotwell drain pipe valve, turbine building basement
Discharges To: Discharge Canal
Discharge Volume: 0.121 MGD (Average for 2002-2006)

Effluent Screening:
- Data from Form 2C and 2002-2006 DMRs have been reviewed and determined to be suitable for evaluation.
- There have been no exceedances of the established limitations. Data reported in Form 2C was analyzed and no pollutants were found to be above the water quality criteria.

Effluent Limitations:
-This internal outfall is considered as "low volume waste sources" under the Steam Electric Power Generating guidelines.
-The effluent limitations for this outfall are based on Federal Effluent Guidelines and are the same as in the previous permit.

Effluent Limitations/Monitoring Requirements: Outfall 109

Average Flow is 0.121 MGD.
Effective Dates: During the period beginning with the permit's effective date and lasting until the expiration date, the permittee is authorized to discharge from Outfall 109 (Hot Well Drains Unit 1).

PARAMETER	BASIS FOR LIMITS	DISCHARGE LIMITATIONS				MONITORING REQUIREMENTS	
		Monthly Average	Daily Maximum	Minimum	Maximum	Frequency	Sample Type
Flow (MGD)	N/A	NL	N/A	N/A	NL	1/Y	Estimate
pH	1	N/A	N/A	6.0 S.U.	9.0 S.U.	1/Y	Grab
TSS	1	30 mg/L	100 mg/L	N/A	N/A	1/Y	Grab
Oil and Grease	1	15 mg/L	20 mg/L	N/A	N/A	1/Y	Grab

The basis for the limitations codes are:
1. Federal Effluent Requirements
2. Best Professional Judgment
3. Water Quality Standards

MGD = Million gallons per day
N/A = Not applicable
NL = No limit; monitor and report
S.U. = Standard units
1/Y = Once every twelve months

Special Conditions Specific to Outfall 109:

pH Monitoring for Internal Outfalls.

The internal outfalls 103, 104, 105, 108, 109, 110, 112, and 113 discharge into an internal discharge canal that then discharges into a waste heat treatment facility (3 lagoons) and then discharges to Lake Anna via Outfall 001. The huge quantity of water in the internal discharge canal (about 2000 MGD) provides a very significant assimilative ability for small discharges from these internal outfalls. Also, as per the memo from Fred Holt, OWRM, dated May 3, 1990 (Steam/Electric Permits), the technology limits for pH need only be met at the point of final discharge. Since pH for all these internal outfalls are based upon technology limit and the violation of water quality standard is not expected, the pH monitoring point for these internal outfalls is redefined to the cooling water discharge canal.

Outfall 110
Hot Well Drain Unit 2

Source: Outfall 110 is substantially identical to Outfall 109 and Outfall 109 data will be submitted to represent Outfall 110.

Source Breakdown	Flow Frequency	Flow Rate/Volume
Hot Well Drains Unit 2	One day per outage at one month per every 18 months.	0.121 MGD (Long Term Average) 0.25 MGD (Maximum Daily) Duration (in days): 1

Treatment: None
Sampling Point: Hotwell drain pipe valve, turbine building basement
Discharges To: Discharge Canal
- Effluent limits are the same as Outfall 109
- **See Outfall 109 for details.**

Effluent Limitations/Monitoring Requirements: Outfall 110

Average Flow is 0.121 MGD.
Effective Dates: During the period beginning with the permit's effective date and lasting until the expiration date, the permittee is authorized to discharge from Outfall 110 (Hot Well Drains Unit 2).

PARAMETER	BASIS FOR LIMITS	DISCHARGE LIMITATIONS				MONITORING REQUIREMENTS	
		Monthly Average	Daily Maximum	Minimum	Maximum	Frequency	Sample Type
Flow (MGD)	N/A	NL	N/A	N/A	NL	1/Y	Estimate
pH	1	N/A	N/A	6.0 S.U.	9.0 S.U.	1/Y	Grab
TSS	1	30 mg/L	100 mg/L	N/A	N/A	1/Y	Grab
Oil and Grease	1	15 mg/L	20 mg/L	N/A	N/A	1/Y	Grab

The basis for the limitations codes are:
1. Federal Effluent Requirements
2. Best Professional Judgment
3. Water Quality Standards

MGD = Million gallons per day
N/A = Not applicable
NL = No limit; monitor and report
S.U. = Standard units
1/Y = Once every twelve months

Special Conditions Specific to Outfall 110:
pH Monitoring for Internal Outfalls.
The internal outfalls 103, 104, 105, 108, 109, 110, 112, and 113 discharge into an internal discharge canal that then discharges into a waste heat treatment facility (3 lagoons) and then discharges to Lake Anna via Outfall 001. The huge quantity of water in the internal discharge canal (about 2000 MGD) provides a very significant assimilative ability for small discharges from these internal outfalls. Also, as per the memo from Fred Holt, OWRM, dated May 3, 1990 (Steam/Electric Permits), the technology limits for pH need only be met at the point of final discharge. Since pH for all these internal outfalls are based upon technology limit and the violation of water quality standard is not expected, the pH monitoring point for these internal outfalls is redefined to the cooling water discharge canal.

Outfall 111

Main Sewage Treatment Plant

Source: All domestic sewage is routed to the sewage treatment plant. The plant is equipped with flow equalization basins, each with a capacity of 18,700 gals. During normal operation, only one side is used but during periods of high demand (outages) both sides are used. Normally discharge is 0.004-0.01 MGD. It can increase to 0.025 MGD during refueling outages, once or twice per year.

Treatment: Extended aeration secondary effluent chlorination in chlorine contact tank

Sampling Point: At the weir

Discharges To: Discharge Canal

Discharge Volume: 0.03 MGD (Design Flow)

Effluent Screening:

- There have been no exceedances of the established limitations.

Effluent Limitations:

- The discharge is to the cooling water discharge canal.
- Water quality standards violations from this discharge are not anticipated as this outfall discharges to the cooling discharge canal with an average flow of 2100 MGD.

Effluent Limitations/Monitoring Requirements: Outfall 111

Average Flow is 0.03 MGD.

Effective Dates: During the period beginning with the permit's effective date and lasting until the expiration date, the permittee is authorized to discharge from Outfall 111 (Main Sewage Treatment Plant).

PARAMETER	BASIS FOR LIMITS	DISCHARGE LIMITATIONS				MONITORING REQUIREMENTS	
		Monthly Average	Weekly Average	Minimum	Maximum	Frequency	Sample Type
Flow (MGD)	3	NL	N/A	N/A	NL	1/D	Estimate
pH	1	N/A	N/A	6.0 S.U.	9.0 S.U.	1/M	Grab
BOD_5	1,2	30 mg/L 3.4 kg/day	45 mg/L 5.1 kg/day	N/A	N/A	1/6M	Grab
TSS	1	30 mg/L 3.4 kg/day	45 mg/L 5.1 kg/day	N/A	N/A	1/3M	Grab
TRC*	2	2.0 mg/L	2.4 mg/L	N/A	N/A	1/D	Grab
E. coli**	2	126 N/cml	N/A	N/A	N/A	1/W**	Grab**

The basis for the limitations codes are:

1. Federal Effluent Requirements
2. Best Professional Judgment
3. Water Quality Standards

MGD = Million gallons per day

N/A = Not applicable

NL = No limit; monitor and report

S.U. = Standard units

1/D = Once every day

1/M = Once every month

1/6M = Once every 6 months

1/3M = Once every 3 months

1/W = Once every week

* TRC monitoring is required only if chlorination is used in the wastewater treatment process.

** E. coli monitoring is required only if approved alternative disinfection is used in lieu of chlorination.

Special Conditions Specific to Outfall 111:

95% Capacity Reopener. Flow loading requirements, applicable to all sewage treatment plants, per VPDES Permit Manual and the VPDES Permit Regulation, 9 VAC 25-31-200.B.4.

Indirect Dischargers requirements. Applicable to all POTWs and PVTOWs, per the VPDES Permit Regulation, 9 VAC 25-31-200.B.

CTC, CTO and O&M requirements. Applicable to all sewage treatment plants, per Code of Virginia Section 62.1-44.19; VPDES Permit Manual, and the Virginia Sewerage Regulations Sections 2.10 and 12.02.

Special Conditions Specific to Outfall 111 (Continued):

Sludge Reopener Clause. Required by VPDES Permit Regulation, 9 VAC 25-31-220.C.4. for all permits issued to treatment works treating domestic sewage and VPDES Permit Manual.

Sludge Management Plan. Requirement applicable to all sewage treatment plants, per OWPS Guidance Memo No.97-004 (5/27/97) and the VPDES Permit Regulation, 9 VAC 25-31-440.A.

Reliability Class. Required by Sewerage Regulation, 9 VAC 25-60-20 and 40 for all STPs.

Outfall 112

Steam Generator Blowdown Unit 1

Source: This outfall was previously approved to represent Outfall 113 (Steam Generator Blowdown Unit 2) and continuously discharges relatively high-purity condensate water from a closed system with small concentrations of corrosion chemicals while the unit is operating. Discharge is shut off once every 18 months for one month for maintenance.

Treatment: None

Sampling Point: Unit 1 sample sink, turbine building basement

Discharges To: Discharge Canal

Discharge Volume: 0.192 MGD (Average for 2002-2006)

Effluent Screening:

- Effluent data from Form 2C and 2002-2006 DMRs have been reviewed and determined to be suitable for evaluation.
- There have been no exceedances of the established limitations. Data reported in Form 2C was analyzed and total Copper as found to be above the water quality criteria.

Pollutants of concern:

- Total Suspended Solids (TSS): An evaluation of the 2002–2006 DMR effluent data shows TSS to be below the limit.
- Oil and Grease (O&G): An evaluation of the 2002–2006 DMR effluent data shows O&G to be below the limit.
- Total Copper: Form 2C showed total Copper was 7.0 ug/L.

Effluent Limitations:

-This internal outfall is considered as "low volume waste sources" under the Steam Electric Generating guidelines. The effluent limitations for this outfall are based on the Federal Effluent Guidelines and are the same as in the previous permit.

Effluent Limitations/Monitoring Requirements: Outfall 112

Average Flow is 0.192 MGD.

Effective Dates: During the period beginning with the permit's effective date and lasting until the expiration date, the permittee is authorized to discharge from Outfall 112 (Steam Generator Blowdown Unit 1).

PARAMETER	BASIS FOR LIMITS	DISCHARGE LIMITATIONS				MONITORING REQUIREMENTS	
		Monthly Average	Daily Maximum	Minimum	Maximum	Frequency	Sample Type
Flow (MGD)	N/A	NL	N/A	N/A	NL	1/Y	Estimate
pH	1	N/A	N/A	6.0 S.U.	9.0 S.U.	1/Y	Grab
TSS	1	30 mg/L	100 mg/L	N/A	N/A	1/Y	Grab
Oil and Grease	1	15 mg/L	20 mg/L	N/A	N/A	1/Y	Grab

The basis for the limitations codes are:

1. Federal Effluent Requirements
2. Best Professional Judgment
3. Water Quality Standards

MGD = Million gallons per day
N/A = Not applicable
NL = No limit; monitor and report
S.U. = Standard units
1/Y = Once every twelve months

Special Conditions Specific to Outfall 112:

pH Monitoring for Internal Outfalls.

The internal outfalls 103, 104, 105, 108, 109, 110, 112, and 113 discharge into an internal discharge canal that then discharges into a waste heat treatment facility (3 lagoons) and then discharges to Lake Anna via Outfall 001. The huge quantity of water in the internal discharge canal (about 2000 MGD) provides a very significant assimilative ability for small discharges from these internal outfalls. Also, as per the memo from Fred Holt, OWRM, dated May 3, 1990 (Steam/Electric Permits), the technology limits for pH need only be met at the point of final discharge. Since pH for all these internal outfalls are based upon technology limit and the violation of water quality standard is not expected, the pH monitoring point for these internal outfalls is redefined to the cooling water discharge canal.

Outfall 113

Steam Generator Blowdown Unit 2

Source: Outfall 113 is substantially identical to Outfall 112 and Outfall 112 data will be submitted to represent Outfall 113.

Treatment: None

Sampling Point: Unit 2 sample sink, turbine building basement

Discharges To: Discharge Canal

- Effluent limits are the same as Outfall 112
- **See Outfall 112 for details.**

Effluent Limitations/Monitoring Requirements: Outfall 113

Average Flow is 0.163 MGD.
Effective Dates: During the period beginning with the permit's effective date and lasting until the expiration date, the permittee is authorized to discharge from Outfall 113 (Steam Generator Blowdown Unit 2).

PARAMETER	BASIS FOR LIMITS	DISCHARGE LIMITATIONS				MONITORING REQUIREMENTS	
		Monthly Average	Daily Maximum	Minimum	Maximum	Frequency	Sample Type
Flow (MGD)	N/A	NL	N/A	N/A	NL	1/Y	Estimate
pH	1	N/A	N/A	6.0 S.U.	9.0 S.U.	1/Y	Grab
TSS	1	30 mg/L	100 mg/L	N/A	N/A	1/Y	Grab
Oil and Grease	1	15 mg/L	20 mg/L	N/A	N/A	1/Y	Grab

The basis for the limitations codes are:

1. Federal Effluent Requirements
2. Best Professional Judgment
3. Water Quality Standards

MGD = Million gallons per day
N/A = Not applicable
NL = No limit; monitor and report
S.U. = Standard units
1/Y = Once every twelve months

Special Conditions Specific to Outfall 113:

pH Monitoring for Internal Outfalls.

Internal outfalls 103, 104, 105, 108, 109, 110, 112, and 113 discharge into an internal discharge canal that then discharges into a waste heat treatment facility (3 lagoons) and then discharges to Lake Anna via Outfall 001. The huge quantity of water in the internal discharge canal (about 2000 MGD) provides a very significant assimilative ability for small discharges from these internal outfalls. Also, as per the memo from Fred Holt, OWRM, dated May 3, 1990 (Steam/Electric Permits), the technology limits for pH need only be met at the point of final discharge. Since pH for all these internal outfalls are based upon technology limit and the violation of water quality standard is not expected, the pH monitoring point for these internal outfalls is redefined to the cooling water discharge canal.

Outfall 114

Service Water Pipe Vault Drain

Source: This outfall is used when leakage accumulates in the Pipe Vault adjacent to the Service Water Reservoir. There is a manually operated sump pump inside the vault. Discharge usually consists of rainwater as service water, industrial discharge, has not occurred in the past 20 years. Outfall 108 is substantially identical to Outfalls 114 and Outfall 108 data shall be submitted to represent Outfall 114.

Treatment: None

Sampling Point: End of pipe on walkway

Discharges To: Discharge Canal

- Effluent limits are the same as Outfall 108
- **See Outfall 108 for details.**

Effluent Limitations/Monitoring Requirements: Outfall 114

Average Flow is 0.0 MGD.

Effective Dates: During the period beginning with the permit's effective date and lasting until the expiration date, the permittee is authorized to discharge from Outfall 114 (Service Water Pipe Vault Drain).

PARAMETER	BASIS FOR LIMITS	DISCHARGE LIMITATIONS				MONITORING REQUIREMENTS	
		Monthly Average	Daily Maximum	Minimum	Maximum	Frequency	Sample Type
Flow (MGD)	N/A	NL	N/A	N/A	NL	1/Y	Estimate

The basis for the limitations codes are:

1. Federal Effluent Requirements
2. Best Professional Judgment
3. Water Quality Standards

MGD = Million gallons per day
N/A = Not applicable
NL = No limit; monitor and report
S.U. = Standard units
1/Y = Once every twelve months

Special Conditions Specific to Outfall 114: None.

Outfall 115

Service Water System Blowdown

Source: This outfall is for emergency use only, to blowdown the service water reservoir when other pathways are not available for whatever reasons. Use has not occurred in the past 20 years. Outfall 108 is substantially identical to Outfall 115 and Outfall 108 data shall be submitted to represent Outfall 115.

Treatment: None

Sampling Point: End of concrete drainage ditch adjacent to the Warehouse 5 fire pump house, midway down the discharge canal.

Discharges To: Discharge Canal

- Effluent limits are the same as Outfall 108.
- **See Outfall 108 for details.**

Effluent Limitations/Monitoring Requirements: Outfall 115

Average Flow is 0.0 MGD.
Effective Dates: During the period beginning with the permit's effective date and lasting until the expiration date, the permittee is authorized to discharge from Outfall 115 (Service Water System Blowdown).

PARAMETER	BASIS FOR LIMITS	DISCHARGE LIMITATIONS				MONITORING REQUIREMENTS	
		Monthly Average	Daily Maximum	Minimum	Maximum	Frequency	Sample Type
Flow (MGD)	N/A	NL	N/A	N/A	NL	1/Y	Estimate

The basis for the limitations codes are:

1. Federal Effluent Requirements
2. Best Professional Judgment
3. Water Quality Standards

MGD = Million gallons per day.
N/A = Not applicable.
NL = No limit; monitor and report.
S.U. = Standard units.
1/Y = Once every twelve months

Special Conditions Specific to Outfall 115: None.

For 1994, 1997, and 2000-2006 - Values are Hourly High and Hourly Mean Temperatures (in Degrees C)

Statistic/ Station	NAL719ST 6	NAL719NT 5	NAL208T 4	NALINT 2	NALTHIST 1	NALBRPTT 3	NALST10 10	NADISC1 7	NAWHTF2 8	NAWHTF3 9	NARIV601 11
					1994						
Jan-94	3.3/2.6	3.6/2.8	*	6.7/4.8	*	9.4/7.5	10.3/8.7	18.3/16.1	15.1/12.2	11.8/9.7	9.3/7.6
Feb-94	5/3.7	5.8/3.6	6.6/3.4	8.6/5.2	*	10.5/8.1	11.4/9.1	19.7/16.6	15.7/13.1	13.5/10.7	10.4/7.9
Mar-94	12.2/7.6	*	11.7/7.4	12.7/8.5	*	14.5/10.9	15/11.7	23.8/19.8	20/16.1	17.9/13.8	13.9/10.9
Apr-94	24.3/16.8	*	24.5/16.6	23.5/16.4	*	*	21.3/17	30.5/26.5	28.3/23.1	27.2/20.7	22.7/17.2
May-94	25/20.6	25.3/20.8	25.1/20.7	24.1/20.6	24.2/20.6	*	23.6/21.3	30.7/28.3	29.4/25.8	27.4/24.3	24.5/21.3
Jun-94	*	31.2/27.3	30.8/27	30.3/26.6	29.9/26.5	*	28.9/25.9	36.3/32.7	34.5/30.7	33.5/29.5	30.2/26.4
Jul-94	31.8/29.4	31.4/29.6	31.9/29.6	31.8/29.4	31.1/29.3	*	31/29.8	37.4/36.3	35.8/33.9	34.4/32.5	32.1/29.7
Aug-94	30/27.8	30.2/27.8	*	30.1/28.1	30.1/28.3	*	30.4/29	36/34.4	34.3/32.3	32.7/30.9	30.9/28.5
Sep-94	27.7/25	27.7/24.9	28.1/25.5	27.9/25.6	*	28.7/26.2	28.5/26.3	34.2/32.5	31.9/29.2	30.3/27.8	28.6/25.8
Oct-94	22.9/19	23.5/19	23.9/20	23.5/20.4	*	24.3/21.4	24.3/21.8	31/27.6	27.7/24.9	25.6/23	*
Nov-94	18/14.1	17.7/14	19.2/15.7	19.4/16.4	19.8/16.5	20.1/17.9	20.9/18.6	27.5/25.2	25.2/22.2	22.9/19.8	*
Dec-94	12.5/9	12.3/8.9	14.8/11.2	15/12	15.4/12.4	16.1/13.8	16.5/14.5	23.6/22	21.5/18.3	19/15.9	*
					1997						
Jan-97	8.9/5	9.5/5.3	11/6.4	10.7/7.5	*	12.3/9.7	13.2/10.7	21.4/18.8	17.7/14.8	15.2/12.1	12.5/9.6
Feb-97	9.5/5.8	9.1/5.7	9.3/5.8	9.9/7.1	*	12/9.7	12.4/10.5	23.2/20.6	19.1/15.5	15.1/12.7	11.9/9.8
Mar-97	14.9/10.6	14.6/10.4	14.1/10.3	14.3/10.9	*	16.2/12.9	16.1/13.6	27.2/24.3	23.3/18.8	19.7/16.2	16.2/12.9
Apr-97	17/14.3	17.6/14.2	17.8/14.4	18.2/14.7	*	19.1/16.3	18.2/16.8	28.6/25.4	23.9/21.3	21.4/19.3	18.4/16.3
May-97	23.3/19	23.1/19.1	22.5/18.9	22.7/18.9	22.9/19.2	22.5/19.7	21.5/20	*	27.4/23.8	25/22	23/19.8
Jun-97	31.1/25.3	*	30.6/24.8	30.1/24.1	29.9/24.3	28.7/23.8	28/23.3	*	34.1/28	32.2/26.7	29.4/23.8
Jul-97	32/29.3	*	32/29.1	31.8/29	31.9/29.2	*	30.4/28.2	37.9/36.2	36.2/33.7	34.8/32.3	32.3/29.1
Aug-97	30.9/28.5	*	30.7/28.7	30.5/28.7	30.9/29	*	30.8/29.4	37.7/36.3	35.6/33.5	33.6/32	31.8/29.1
Sep-97	29.5/25.3	*	29.4/25.9	28.9/26.2	29.5/26.5	*	29.7/27.6	36.2/33.8	34.6/30.9	32.3/29.3	30.5/26.6
Oct-97	25.7/20.2	*	25.5/21.1	25.7/21.5	25.7/21.8	25.7/22.8	25.5/23.1	32.3/29.5	30.7/26.5	29/24.6	26.5/22
Nov-97	16.2/11	13.9/9.9	17.7/13.3	18.1/14	*	19.3/15.9	20/16.6	27/23.8	*	21.7/17.8	19.2/15.6
Dec-97	9.6/6.7	9/6.7	11.8/9.3	12.4/10.2	12.9/10.7	13.9/12.1	15/12.8	22.5/21.3	*	16.7/14.6	14.2/12

Key:

-Temp High (highest hourly temperature recorded during the month)/Temp Mean

-Highlighted Cells Indicate A Temperature > 32^{o} C

-* Missing Data

For 1994, 1997, and 2000-2006 - Values are Hourly High and Hourly Mean Temperatures (in Degrees C)

Statistic/ Station	NAL719ST 6	NAL719NT 5	NAL208T 4	NALINT 2	NALTHIST 1	NALBRPTT 3	NALST10 10	NADISC1 7	NAWHTF2 8	NAWHTF3 9	NARIV601 11
					2000						
Jan-00	8.7/5.4	8.4/5.3	10.4/6.6	10.8/7.8	10.2/7.7	12.4/9.9	12.9/10.6	23.5/20.5	19.4/15.1	15.2/12.4	13.5/9.8
Feb-00	10.6/5.6	9.8/5.4	10.5/5.4	11.3/6.9	11.3/7.3	12.7/9.1	12/9.4	21.8/18.2	18.3/14.4	16.9/12.1	13.1/9.3
Mar-00	15.2/11.9	14.8/11.8	15.1/12.1	15.5/12.4	15.1/12.5	15.5/13.4	15.2/12.6	25.7/23.3	22.1/18	19.4/16.3	15.9/13.5
Apr-00	17.6/15.2	17.2/15	17.2/14.8	18/15.6	17.6/15.1	18.7/16.1	17.6/15.5	27.9/24	23.6/20.2	21.5/18.3	18.4/15.7
May-00	26.7/23.2	26.8/23.3	26.4/22.8	23.5/20.4	25.7/22.8	25.5/22.7	23.2/20.2	32/29.7	30.1/27.3	28.2/25.6	25.4/22.1
Jun-00	30.3/26.9	30.4/26.7	30/26.6	27.8/24.9	30/26.6	29.8/26.6	27.5/24.6	37.4/34.2	36.6/32	32.3/29.5	30.1/26.1
Jul-00	31.5/28.6	30.4/28.4	30.8/28.7	30.1/28.3	31.2/29.1	31/29.3	29.3/28	38.6/36.8	37/33.9	37.3/31.6	31.2/28.6
Aug-00	30.4/27.6	30.4/27.2	30.8/28.2	30.8/28	30.8/28.3	30.8/28.9	28.9/27.6	37.3/35.5	35/32.4	33.8/31.3	31.2/28.4
Sep-00	27.9/24.4	28.2/25.9	29.3/27.4	29.3/25.9	29.4/27.1	29.4/27.3	28.6/27.5	35.4/32.5	34.2/32	31.5/29	30.8/27.3
Oct-00	22.9/15.4	25.7/20	27.9/21.7	26.1/21.2	26.8/21.8	26.5/22.9	26.4/22.9	30.9/28.4	34.2/24	29.3/24.5	28.6/21.6
Nov-00	12.7/9.9	16.6/12.6	18.3/14.9	18.3/15	19/15.5	20.7/17.8	21.2/17.9	28.3/25.7	22.1/19	22.2/19	20.4/17
Dec-00	7.2/4.6	8.4/5	11.3/7.9	11.3/8.9	12/8.4	15.5/13.1	14.8/12	24.7/21.7	16.5/14.3	16.2/13.6	14.5/11.4
					2001						
Jan-01	5.0/4.2	5.1/3.9	*	8.8/5.5	7.7/5.6	13.3/10.0	12.4/10.2	20.8/17.9	14.1/12.4	14.8/11.9	10.9/8.7
Feb-01	8.8/6.4	7.3/5.6	*	8.0/5.9	9.2/7.4	10.9/9.5	11.6/10.6	19.7/18.2	16.2/14.4	14.8/12.8	11.3/9.4
Mar-01	11.3/8.6	10.2/7.7	*	9.5/7.6	10.6/9.0	11.6/10.4	12.3/11.5	20.4/19.1	16.6/14.2	14.8/13.4	12.0/10.5
Apr-01	21.1/15.6	20.8/15.4	*	19.0/14.4	19.4/15.2	20.0/15.5	18.2/14.7	28.6/22.9	25.7/20.2	24.0/18.9	21.0/15.5
May-01	25.3/21.9	25.3/21.8	24.3/21.8	23./21.7	23.5/21.7	23.9/22.1	22.8/20.1	31.5/29.8	29.7/27.1	27.5/25.6	24.7/21.8
Jun-01	31.5/27.0	31.5/27.0	31.1/26.9	31.1/26.7	30.8/26.6	31.1/26.9	28.9/25.2	37.3/33.9	36.1/31.6	34.2/30.1	31.5/26.6
Jul-01	30.8|28.1	30.8|28.2	30.4|28.4	30.0|28.4	30.0|28.7	30.4|29.1	30.3|28.8	37.3|35.8	35.0|33.2	33.1|31.4	30.5|28.3
Aug-01	32.3|29.3	32.5|29.2	32.3|29.5	31.5|29.6	32.0|29.3	30.9|29.5	30.3|29.4	37.3|35.8	35.9|33.5	34.3|32.0	32.2|29.3
Sep-01	28.9|25.6	29.0|25.5	29.3|26.5	30.0|27.2	29.1|26.4	29.7|26.8	29.9|27.2	36.0|33.6	33.7|29.9	31.7|28.2	29.9|26.1
Oct-01	22.3/18.7	23.3/19.1	25.4/20.0	24.3/20.2	23.2/20.4	24.0/20.5	23.2/21.5	30.2/27.8	27.3/24.7	24.7/22.8	23.4/20.2
Nov-01	17.1/13.6	17.3/13.8	18.4/15.4	18.7/15.7	18.8/16.0	*	19.4/17.0	24.7/22.1	22.3/19.1	20.8/17.9	19.6/16.0
Dec-01	15.0/10.7	15.4/11.1	16.1/12.4	16.0/12.9	16.5/13.3	16.6/14.1	16.6/14.8	23.8/21.7	20.4/17.6	18.3/15.8	16.8/13.5

Key:

-Temp High (highest hourly temperature recorded during the month)/Temp Mean

-Highlighted Cells Indicate A Temperature > 32^{o} C

-* Missing Data

For 1994, 1997, and 2000-2006 - Values are Hourly High and Hourly Mean Temperatures (in Degrees C)

Statistic/ Station	NAL719ST 6	NAL719NT 5	NAL208T 4	NALINT 2	NALTHIST 1	NALBRPTT 3	NALST10 10	NADISC1 7	NAWHTF2 8	NAWHTF3 9	NARIV601 11
					2002						
Jan-02	8.8/4.7	10.0/5.4	11.8/6.9	9.0/7.6	12.0/8.6	12.7/10.2	12.0/10.9	24.6/21.0	20.4/16.2	17.5/13.1	*
Feb-02	9.2/7.3	9.9/7.6	11.6/8.7	*	12.0/9.9	13.4/11.5	*	24.6/22.1	20.1/17.5	17.3/14.9	*
Mar-02	14.2/10.0	14.7/10.4	14.5/11.3	*	15.2/12.3	15.9/13.7	*	23.9/21.2	21.7/18.4	19.1/16.5	*
Apr-02	23.6/17.4	25.4/17.8	23.9/17.6	*	22.8/18.0	22.5/18.7	*	30.8/26.9	29.1/23.9	26.3/22.0	*
May-02	27.8/21.9	28.4/22.0	27.4/21.7	26.3/21.7	26.9/21.8	26.0/22.3	25.5/23.0	33.0/30.6	32.1/27.6	30.3/25.7	27.7/22.2
Jun-02	31.5/28.1	31.5/28.3	30.9/27.8	31.0/27.6	31.5/27.7	30.7/27.9	30.7/28.0	37.4/35.1	36.1/32.7	34.4/31.3	31.6/27.6
Jul-02	32.1/29.5	32.1/29.6	32.1/29.8	32.2/30.0	32.3/30.1	32.2/30.6	32.5/30.9	39.1/37.5	36.8/34.7	35.4/33.3	32.6/29.7
Aug-02	32.7/29.5	31.9/29.4	32.3/29.8	32.1/29.9	32.2/30.0	32.6/30.8	32.5/31.3	39.5/37.7	37.3/34.7	35.3/33.2	32.7/29.9
Sep-02	28.4/25.9	27.6/25.6	28.2/26.4	29.7/26.6	28.8/26.7	29.4/27.5	29.7/27.9	35.9/32.3	33.3/30.0	31.6/29.0	29.7/26.6
Oct-02	26.4/20.2	26.0/20.2	26.5/21.4	26.5/21.8	26.9/22.0	27.1/22.8	27.2/23.2	31.2/27.2	29.4/24.6	28.5/23.6	27.0/21.7
Nov-02	14.1/11.5	14.3/11.6	16.0/13.2	16.6/13.9	16.8/14.2	17.6/15.1	17.4/15.6	23.0/21.1	19.8/17.5	17.9/16.1	16.5/14.2
Dec-02	8.0/4.8	8.2/5.1	9.9/6.6	10.8/7.4	10.9/7.6	*	12.1/9.0	21.1/19.1	14.9/12.5	12.4/9.9	11.1/8.0
					2003						
Jan-03	5.4/4.1	5.6/4.0	6.4/4.1	7.0/5.3	7.3/5.6	8.3/6.4	9.6/7.6	15.5/12.6	12.2/9.2	11.0/8.2	9.4/6.4
Feb-03	4.3/2.9	4.4/3.0	3.6/3.0	4.8/3.9	5.8/4.4	7.5/6.4	8.8/7.6	14.7/13.1	12.5/9.8	10.2/8.2	7.6/6.4
Mar-03	15.8/8.4	15.5/8.1	14.5/7.6	13.8/8.0	13.7/8.2	13.0/9.2	12.7//9.0	23.3/17.7	19.0/13.6	17.2/11.9	12.7/9.2
Apr-03	21.2/14.9	20.9/14.9	20.0/14.2	20.4/13.8	20.4/13.9	19.6/14.1	18.1/13.8	27.5/21.6	24.6/18.4	24.0/16.9	19.0/14.1
May-03	23.1/20.5	23.1/20.3	22.3/20.2	22.3/19.9	22.3/20.0	22.5/20.2	21.2/19.1	30.0/28.9	27.6/25.7	25.9/24.0	22.5/20.1
Jun-03	30.2/24.6	29.0/24.6	29.8/24.7	30.0/24.4	29.5/24.5	29.3/24.3	27.0/23.6	35.1/30.8	33.6/28.7	31.8/27.4	28.6/24.1
Jul-03	30.8/29.1	30.6/29.2	30.8/29.0	30.7/28.7	30.3/28.7	30.3/28.8	30.2/28.2	38.1/36.2	35.5/33.5	33.5/31.9	30.6/28.5
Aug-03	31.3/29.2	31.4/29.1	31.5/29.5	32.0/29.3	31.6/29.6	31.6/30.0	30.9/29.9	38.5/37.4	36.4/34.4	34.7/32.7	31.6/29.4
Sep-03	29.9/25.3	30.0/25.2	30.0/26.1	29.5/26.3	29.9/26.5	30.6/27.3	30.7/27.9	37.3/34.1	35.0/30.8	33.0/29.2	30.5/26.4
Oct-03	22.4/19.2	22.4/19.1	23.6/20.4	23.8/20.8	24.1/21.1	25.3/22.1	25.8/22.8	31.7/29.7	28.8/26.0	27.3/24.2	24.6/21.7
Nov-03	19.8/14.7	19.6/14.6	20.8/16.4	20.8/16.9	21.0/17.2	21.4/18.1	21.3/18.7	29.9/26.2	26.8/22.7	24.5/20.6	21.6/17.9
Dec-03	10.6/5.9	11.0/6.3	12.5/8.3	13.4/9.5	13.8/10.1	15.2/11.8	16.2/12.8	22.9/20.5	19.5/16.1	17.0/13.8	15.2/11.9

Key:

-Temp High (highest hourly temperature recorded during the month)/Temp Mean

-Highlighted Cells Indicate A Temperature > 32^{o} C

-* Missing Data

For 1994, 1997, and 2000-2006 - Values are Hourly High and Hourly Mean Temperatures (in Degrees C)

Statistic/ Station	NAL719ST 6	NAL719NT 5	NAL208T 4	NALINT 2	NALTHIST 1	NALBRPTT 3	NALST10 10	NADISC1 7	NAWHTF2 8	NAWHTF3 9	NARIV601 11
					2004						
Jan-04	7.4/3.9	8.1/4.2	10.4/5.4	10.8/6.6	11.6/7.1	12.0/9.0	12.9/10.0	23.9/18.7	19.2/14.1	15.5/11.5	12.5/9.1
Feb-04	6.9/3.9	6.3/4.1	7.1/3.8	8.4/4.9	9.0/5.8	10.3/8.2	10.6/9.1	19.5/15.9	15.4/12.6	13.4/10.8	10.7/8.3
Mar-04	13.9/10.2	14.6/10.3	14.2/10.5	14.4/10.7	14.7/11.4	15.0/12.4	14.5/12.6	25.8/22.5	21.9/18.5	19.0/15.8	15.0/12.7
Apr-04	22.3/15.3	22.7/15.4	21.9/15.2	22.3/15.2	21.2/15.4	20.0/15.9	19.0/15.2	29.8/26.4	26.3/22.1	25.3/20.0	21.0/16.3
May-04	28.8/24.7	29.8/25.0	29.1/24.3	28.3/23.8	28.2/23.7	27.5/23.3	24.5/19.0	33.3/30.4	31.7/27.8	29.7/26.3	28.0/23.4
Jun-04	29.4/26.6	29.2/26.7	29.3/26.6	29.4/26.3	29.0/26.3	28.7/26.4	28.4/25.5	35.7/33.8	33.8/31.1	32.4/29.7	29.4/26.5
Jul-04	30.8/29.1	31.0/29.0	30.7/29.2	31.6/29.1	31.0/29.2	30.9/29.6	30.4/29.3	37.8/36.8	35.7/33.9	34/32.6	31.4/29.5
Aug-04	30.8/28.2	30.6/28.1	30.8/28.4	30.3/28.4	30.7/28.1	31.1/29.1	30.3/29.2	37.6/36.1	35.6/33.3	33.7/31.7	30.8/28.8
Sep-04	29.1/25.8	29.0/25.5	29.2/26.2	29.6/26.4	29.5/26.6	29.8/27.2	29.9/27.4	36.5/33.9	34.4/30.2	32.8/28.9	29.8/26.6
Oct-04	24.0/19.7	23.7/19.5	24.2/20.7	24.2/21.0	24.5/21.4	25.4/22.3	25.5/22.9	32.6/29.4	28.0/25.8	26.8/24.0	25.1/21.4
Nov-04	18.3/14.1	19.0/14.1	19.8/15.7	19.9/16.4	20.5/17.0	21.1/18.0	21.5/18.5	29.6/25.8	25.8/22.1	24.0/20.2	21.6/17.5
Dec-04	11.7/7.8	11.8/8.1	13.3/10.1	14.0/11.3	14.8/11.9	16.1/13.2	16.8/14.0	23.4/20.9	20.5/17.2	18.3/15.1	15.7/13.0
					2005						
Jan-05	10.1/6.1	9.8/6.3	11.7/7.8	11.8/8.6	12.2/9.1	12.6/10.4	13.3/11	21.9/18.8	18.7/15	16.2/13	13/10.3
Feb-05	7.9/5.5	7.5/5.6	9/6.4	9.9/7.6	10.3/8.3	11.9/10	12/10.7	19.8/17.9	16.3/14.1	14.5/12.6	11.8/10
Mar-05	11.9/7.9	12/7.8	12/8.5	12.4/9.5	13.2/10.0	14.6/11.4	14.1/12	22.5/19.9	19.1/16	17.9/14.2	14.4/11.4
Apr-05	19.9/15.4	19.4/15.6	20/15.5	19.9/15.7	20.1/15.8	20/16.3	18.8/16	27.9/25.1	24.8/21.8	23.1/20.1	20/16.3
May-05	23.7/19.8	23.3/19.7	24/19.8	25/20	23.8/20.0	24.3/20.7	23.1/20.5	32/28.9	29.3/25.7	27.7/24	24.6/20.9
Jun-05	30.4/27.3	30.5/27.3	30.1/27	30/26.7	29.8/26.5	29.6/26.6	29.3/25.7	36.7/33.9	34.7/31.7	33.1/30.2	30.6/26.8
Jul-05	33.3/30.2	32.8/30.2	32.8/30.3	33.4/30.4	33.2/30.5	33/30.7	32.3/30.6	39.6/38	37.8/35.2	35.9/33.6	33.7/30.6
Aug-05	32.4/30.3	32.2/30.2	32.5/30.6	33.5/30.8	32.5/30.9	32.8/31.4	32.5/31.7	39.8/38.1	37.6/35.3	35.6/33.8	33.8/31.1
Sep-05	29.5/27.5	29.3/27.1	29.8/27.9	30.6/28.2	30/28.5	31/29.3	31.3/29.9	37.3/36	34.9/32.9	33.3/31.4	31.5/28.8
Oct-05	25.3/20.7	25.1/20.6	25.9/21.7	26.2/22.2	26.5/22.3	27.5/22.9	28.1/23.4	33.7/29.4	31.6/25.4	29.6/23.9	27.9/22.5
Nov-05	16.4/13.7	16.7/14.0	18.1/15.5	18.3/15.9	18.3/16.1	19.4/17.3	19.5/17.7	27.0/24.8	23.9/21.3	22.0/19.2	19.7/16.8
Dec-05	10.9/5.8	10.8/6.3	12.8/8.5	13.4/9.5	13.8/9.7	15.3/11.5	15.7/12.0	25.5/22.5	19.2/16.6	17.7/13.7	14.9/11.5

Key:

-Temp High (highest hourly temperature recorded during the month)/Temp Mean

-Highlighted Cells Indicate A Temperature > 32^{o} C

-* Missing Data

For 1994, 1997, and 2000-2006 - Values are Hourly High and Hourly Mean Temperatures (in Degrees C)

Statistic/ Station	NAL719ST 6	NAL719NT 5	NAL208T 4	NALINT 2	NALTHIST 1	NALBRPTT 3	NALST10 10	NADISC1 7	NAWHTF2 8	NAWHTF3 9	NARIV601 11
					2006						
Jan-06	7.6/6.0	7.5/6.1	9.6/7.6	9.9/8.5	*	11.5/10.6	12.0/11.1	23.8/22.1	18.5/16.5	15.0/13.7	12.2/10.8
Feb-06	7.9/6.5	8.0/6.7	9.1/7.3	9.8/8.2	*	11.7/10.4	12.2/11.1	22.4/20.6	18.4/15.9	14.8/13.0	11.9/10.6
Mar-06	13.8/9.7	13.8/9.8	13.1/9.8	12.6/10.2	*	14.0/12.0	14.0/11.9	25.0/22.8	20.2/16.7	17.7/14.7	15.9/12.3
Apr-06	21.1/16.6	21.8/16.7	21.1/16.2	20.4/16.3	*	21.0/17.0	20.2/16.6	27.9/24.9	26.3/21.6	24.4/20.0	21.2/17.2
May-06	28.4/21.2	28.4/21.2	27.5/21.2	27.7/21.4	*	26.7/22.0	25.5/22.1	33.2/29.4	31.7/26.7	30.7/25.3	27.5/21.8
Jun-06	29.8/27.0	29.8/27.0	29.6/26.7	29.9/26.5	*	29.6/26.8	29.3/26.8	36.3/34.0	34.3/31.4	32.7/30.2	29.5/26.6
Jul-06	32.2/29.7	32.3/29.8	32.4/29.6	32.9/29.6	*	32.4/30.1	32.1/30.2	39.3/37.2	37.0/34.4	35.9/33.0	33.1/29.6
Aug-06	33.5/30.5	33.6/31.2	34.0/30.5	*	*	33.7/31.3	32.9/31.6	40.5/38.3	38.0/35.2	36.7/33.8	34.0/30.9
Sep-06	28.2/24.6	29.9/26.7	28.6/25.3	*	29.1/25.9	29.9/26.7	30.7/27.3	36.9/33.4	32.6/30.2	31.7/28.5	28.7/26.1
Oct-06	23.7/18.8	25.7/21.9	24.7/20.1	*	25.1/21.0	25.7/21.9	26.1/22.7	32.3/29.3	30.1/25.7	27.6/23.8	26.2/21.5
Nov-06	16.1/12.5	18.8/12.4	18.2/14.4	*	18.1/15.2	19.1/16.3	19.8/17.2	27.5/24.5	24.3/20.5	21.6/18.4	19.2/16.2
Dec-06	13.6/9.1	12.8/9.2	14.6/11.2	14.4/11.6	14.7/11.9	15.3/13.0	16.0/13.9	27.6/25.0	22.4/19.4	18.7/16.3	15.8/13.1

Key:

-Temp High (highest hourly temperature recorded during the month)/Temp Mean

-Highlighted Cells Indicate A Temperature > 32^{o} C

-* Missing Data

Notice of Public Comment and Public Hearing
Reissuance of VPDES Permit VA0052451
North Anna Power Station Units 1 and 2

Citizens may comment on the proposed reissuance of a permit that allows the release of cooling water, storm water and treated sewage wastewater into a water body in Louisa County, Virginia.

PUBLIC COMMENT PERIOD: June 15, 2007 to 5:00 p.m. on August 2, 2007.

PERMIT NAME: Virginia Pollutant Discharge Elimination System Permit
Owners or operators of industrial facilities that discharge or propose to discharge wastewater and storm water into the streams, rivers, lakes or bays of Virginia from a point source must apply for this permit. In general, point sources are fixed sources of pollution such as pipes, ditches or channels. The applicant must submit the application to the Department of Environmental Quality, under the authority of the State Water Control Board.

PURPOSE OF NOTICE: To invite the public to comment on the draft permit and to announce a public hearing on the draft permit from the Department of Environmental Quality.

PUBLIC MEETING AND HEARING: A public meeting and hearing will be held at The Forum of Louisa County Middle School, 1009 Davis Highway, Mineral, Virginia, on July 18, 2007 beginning at 6:00 pm. Department of Environmental Quality staff will conduct a question and answer session from 6:00 – 7:00 pm. The public hearing will begin at 7:00 pm.

NAME, ADDRESS AND PERMIT NUMBER OF APPLICANT: Virginia Electric and Power Company
5000 Dominion Boulevard, Glen Allen, VA 23060
VA0052451

NAME AND ADDRESS OF FACILITY: Dominion – North Anna Power Station
1022 Haley Drive, Mineral, VA 23117

PROJECT DESCRIPTION: Virginia Electric and Power Company has applied for the reissuance of a permit for the discharge of wastewaters from the operation of existing Units 1 and 2 of the Dominion – North Anna Power Station in Louisa County, Virginia. This permit does not address or authorize any proposed discharges from additional units.

The applicant proposes to release cooling water at an average rate of 2057 Million Gallons per Day into Lake Anna in Louisa County. This permit also authorizes the discharge of storm water and treated sewage wastewater. Sludge from the sewage plant will be disposed of at the Louisa County Water Authority STP. The permit will limit the following pollutants to amounts that protect water quality: pH, Total Residual Chlorine, Free Available Chlorine, Total Suspended Solids, Oil and Grease, Heat Rejected, Total Chromium, Total Zinc, 126 Priority Pollutants and BOD_5. The permit will require monitoring for Chronic Toxicity using *C. dubia* and *P. promelas*.

HOW A DECISION IS MADE: Public comments will be considered and summarized by staff and presented to the State Water Control Board. The State Water Control Board will make final decisions at their next scheduled meeting.

HOW TO COMMENT: DEQ accepts comments by e-mail, fax or postal mail. All comments must be in writing and be received by DEQ during the comment period.

WRITTEN COMMENTS MUST INCLUDE:
1. The names, mailing addresses and telephone numbers of the person commenting and of all people represented by the citizen.
2. A brief, informal statement regarding the extent of the interest of the person commenting, including how the operation of the facility or activity affects the citizen.

TO REVIEW THE DRAFT PERMIT AND APPLICATION: The public may review the documents at the DEQ-Northern Virginia Regional Office every work day by appointment. Copies may be requested by contacting staff listed below. The draft permit and fact sheet is also available at the following link:
http://www.deq.virginia.gov/vpdes/northannapermit.html

CONTACT FOR PUBLIC COMMENTS, DOCUMENT REQUESTS AND ADDITIONAL INFORMATION:
Name: Susan Mackert
Address: DEQ-Northern Virginia Regional Office, 13901 Crown Court, Woodbridge, VA 22193
Phone: (703) 583-3853 E-mail: sdmackert@deq.virginia.gov Fax: (703) 583-3841

Reservoir

557.52A

It is contemplated that the above mentioned lands, together with other lands, will be used for the construction and operation of electric generating facilities on the North Anna River, including, without limitation, a reservoir to provide cooling water and for other reservoir uses, a dam at a point approximately one mile upstream from the Louisa County--Hanover County line, dikes, water cooling lagoons, electric pole and tower lines, underground electric lines and underground pipe lines. The water in the reservoir may be raised to a height at the dam not exceeding 255 feet above mean sea level as determined from the bench marks of the United States Coast and Geodetic Survey, and the operation of the generating facilities, reservoir, dam, dikes and cooling lagoons will involve raising (to a height at the dam not exceeding 255 feet as hereinabove mentioned) and lowering the waters from time to time as may be deemed advisable by the persons operating them. Insofar as Owner may lawfully do so, Owner, for himself, his successors and assigns, for the above considerations, does hereby grant and convey to Company the right to maintain and operate the electric generating facilities, dam, reservoir, dikes, cooling lagoons, electric lines and pipe lines, including, without limitation, the raising and lowering of the waters as aforesaid and changing the condition of said waters.

The considerations aforesaid shall be in full and total payment for the land and improvements thereon, if any, for all trees, undergrowth or other obstructions on said lands, for all rights hereby granted, and for all damages, if any, to the residue of the lands and other property of Owner.

There is reserved to Owner the exclusive right, except as herein stated and subject to requirements by regulatory authority, to enter upon, occupy and use for recreational or agricultural purposes any part of the land hereby conveyed to Company which may lie above the fluctuating water line of the said reservoir, hereinafter called "shore land". Subject to requirements by regulatory authority, as such requirements may apply to Owner or Company, Owner may construct, maintain and use on such shore land and beyond the same into the waters of said reservoir upon the land hereby conveyed to Company, such piers, jetties or other recreational or protective structures as are not detrimental to the development, operation and maintenance of said electric generating facilities, dam, reservoir, dikes and cooling lagoons, or to the construction, operation and maintenance of electric lines and pipe lines as herein provided, but Owner shall not have the right to construct or maintain any structure for human habitation on any part of said land, and Owner shall obtain Company's approval of the type and location of such piers, jetties, recreational or protective structures before they are constructed. Owner shall retain whatever right and privilege he had prior to the acquisition of his lands hereunder and the establishment of the reservoir to use the waters of the North Anna River or its tributaries for domestic purposes on his remaining lands bordering the land acquired hereunder, subject, however, to the rights granted Company as hereinabove provided. The rights reserved to Owner shall not exclude the right of Company, through its employees or contractors, to enter upon and inspect such shore land, clear the same, remove or keep the same clear of timber, brush, trash, pollutants, structures or obstructions, or to carry out any other activities thereon that the Company may deem necessary for the development, operation and maintenance of such electric generating facilities, dam, reservoir, dikes, cooling lagoons, electric lines and pipe lines. Company will not construct electric pole or tower lines upon the shore land along any route generally paralleling the shore line without the consent of Owner. Owner agrees that he will not cause pollutants to pass across or through the aforesaid shore land nor cause any waste, refuse or trash to be or remain thereon, or maintain thereon any nuisance or permit any structures thereon to become dilapidated, unsightly or unsafe.

All references to Owner and Company shall include their heirs, successors and assigns.

Owner covenants that he has the right to convey the said land to Company, that he has done no act to encumber the said land, that Company shall have quiet possession of said land, free from all encumbrances; and that he, said Owner, will execute such further assurances of said land as may be requisite.

WITNESS the following signature___and seal___:

_____ (SEAL) _____ (SEAL)

_____ (SEAL) _____ (SEAL)

557.51

THIS DEED WITH RESERVATION OF EASEMENT, made this _____ day of _____,

19__, between _____

_____

_____,

hereinafter called "Owner" (whether one or more or masculine or feminine); and VIRGINIA ELECTRIC AND POWER COMPANY, a Virginia corporation, hereinafter called "Company":

W I T N E S S E T H that:

For the sum of $ _____, and other valuable considerations, the receipt whereof is hereby acknowledged, Owner hereby grants and conveys to Company, with General Warranty of Title, all that certain piece or parcel of land in _____ Magisterial District, _____ County, Virginia, with the improvements on said land, as shown on _____ hereto attached and made a part of this deed; the said land being described as follows:

Together with all the privileges, appurtenances and riparian rights belonging or in anywise appertaining thereto; and all rights, title and interest of Owner in and to any private or public ways within said land and in and to the bed of the North Anna River.

WHTF

557.73

It is contemplated that the above mentioned lands, together with other lands, will be used for the construction and operation of electric generating facilities on the North Anna River, including, without limitation, a reservoir to provide cooling water and for other reservoir uses, a dam at a point approximately one mile upstream from the Louisa County–Hanover County line, dikes, water cooling lagoons, electric pole and tower lines, underground electric lines and underground pipe lines. The water in the reservoir may be raised to a height at the dam not exceeding 255 feet above mean sea level as determined from the bench marks of the United States Coast and Geodetic Survey, and the operation of the generating facilities, reservoir, dam, dikes and cooling lagoons will involve raising (to a height at the dam not exceeding 255 feet as hereinabove mentioned) and lowering the waters from time to time as may be deemed advisable by the persons operating them. The cooling lagoons shall be a private water treatment facility and not public bodies of water. Insofar as Owner may lawfully do so, Owner, for himself, his successors and assigns, for the above considerations, does hereby grant and convey to Company the right to maintain and operate the electric generating facilities, dam, reservoir, dikes, cooling lagoons, electric lines and pipe lines, including, without limitation, the raising and lowering of the waters as aforesaid and changing the condition of said waters.

The considerations aforesaid shall be in full and total payment for the land and improvements thereon, if any, for all trees, undergrowth or other obstructions on said lands, for all rights hereby granted, and for all damages, if any, to the residue of the lands and other property of Owner.

There is reserved to Owner the exclusive right, except as herein stated and subject to requirements by regulatory authority, to enter upon, occupy and use for recreational or agricultural purposes any part of the land hereby conveyed to Company which may lie above the fluctuating water line of the said cooling lagoons, hereinafter called "shore land". Subject to requirements by regulatory authority, as such requirements may apply to Owner or Company, Owner may construct, maintain and use on such shore land and beyond the same into the waters of said cooling lagoons upon the land hereby conveyed to Company, such piers, jetties or other recreational or protective structures as are not detrimental to the development, operation and maintenance of said electric generating facilities, dam, reservoir, dikes and cooling lagoons, or to the construction, operation and maintenance of electric lines and pipe lines as herein provided, but Owner shall not have the right to construct or maintain any structure for human habitation on any part of said land, and Owner shall obtain Company's approval of the type and location of such piers, jetties, recreational or protective structures before they are constructed. Owner shall retain whatever right and privilege he had prior to the acquisition of his lands hereunder and the establishment of the cooling lagoons to use the waters of the North Anna River or its tributaries for domestic purposes on his remaining lands bordering the land acquired hereunder, subject, however, to the rights granted Company as hereinabove provided. The rights reserved to Owner shall not exclude the right of Company, through its employees or contractors, to enter upon and inspect such shore land, clear the same, remove or keep the same clear of timber, brush, trash, pollutants, structures or obstructions, or to carry out any other activities thereon that the Company may deem necessary for the development, operation and maintenance of such electric generating facilities, dam, reservoir, dikes, cooling lagoons, electric lines and pipe lines. Company will not construct electric pole or tower lines upon the shore land along any route generally paralleling the shore line without the consent of Owner. Owner agrees that he will not cause pollutants to pass across or through the aforesaid shore land nor cause any waste, refuse or trash to be or remain thereon, or maintain thereon any nuisance or permit any structures thereon to become dilapidated, unsightly or unsafe. The rights of Owner specified in this paragraph may be limited, modified or revoked by the Company without compensation to Owner, but only in the event and to the extent that such limitation, modification or revocation is necessary in order to preserve the character and maintain the operation of the cooling lagoons as a private water treatment facility.

All references to Owner and Company shall include their heirs, successors and assigns.

Owner covenants that he has the right to convey the said land to Company, that he has done no act to encumber the said land, that Company shall have quiet possession of said land, free from all encumbrances; and that he, said Owner, will execute such further assurances of said land as may be requisite.

WITNESS the following signature___ and seal___:

_____(SEAL)	_____(SEAL)
_____(SEAL)	_____(SEAL)
_____(SEAL)	_____(SEAL)
_____(SEAL)	_____(SEAL)

557.65

THIS DEED, made this _____ day of _____, 19___, between

_____

_____

_____

hereinafter called "Owner" (whether one or more or masculine or feminine); and VIRGINIA ELECTRIC AND POWER COMPANY, a Virginia corporation, hereinafter called "Company":

WITNESSETH that:

For the sum of $_____, and other valuable considerations, the receipt whereof is hereby acknowledged, Owner hereby grants and conveys to Company, with General Warranty of Title, all that certain piece or parcel of land in _____ Magisterial District, _____ County, Virginia, with the improvements on said land, as shown on _____ hereto attached and made a part of this deed; the said land being described as follows:

Together with all the privileges, appurtenances and riparian rights belonging or in anywise appertaining thereto; and all rights, title and interest of Owner in and to any private or public ways within said land and in and to the bed of the North Anna River.

Revised 2/2003

State "Transmittal Checklist" to Assist in Targeting
Municipal and Industrial Individual NPDES Draft Permits for Review

Part I. State Draft Permit Submission Checklist

In accordance with the MOA established between the Commonwealth of Virginia and the United States Environmental Protection Agency, Region III, the Commonwealth submits the following draft National Pollutant Discharge Elimination System (NPDES) permit for Agency review and concurrence.

Facility Name:	**Dominion – North Anna Power Station**
NPDES Permit Number:	**VA00052451**
Permit Writer Name:	**Christine Joyce**
Date:	**December 21, 2005**

Major [X] **Minor** [] **Industrial** [X] **Municipal** [ ]

I.A. Draft Permit Package Submittal Includes:	**Yes**	**No**	**N/A**
1. Permit Application?	x		
2. Complete Draft Permit (for renewal or first time permit – entire permit, including boilerplate information)?	x		
3. Copy of Public Notice?	x		
4. Complete Fact Sheet?	x		
5. A Priority Pollutant Screening to determine parameters of concern?	x		
6. A Reasonable Potential analysis showing calculated WQBELs?	x		
7. Dissolved Oxygen calculations?			x
8. Whole Effluent Toxicity Test summary and analysis?	x		
9. Permit Rating Sheet for new or modified industrial facilities?	x		

I.B. Permit/Facility Characteristics	**Yes**	**No**	**N/A**
1. Is this a new, or currently unpermitted facility?		x	
2. Are all permissible outfalls (including combined sewer overflow points, non-process water and storm water) from the facility properly identified and authorized in the permit?	x		
3. Does the fact sheet **or** permit contain a description of the wastewater treatment process?	x		
4. Does the review of PCS/DMR data for at least the last 3 years indicate significant non-compliance with the existing permit?		x	
5. Has there been any change in streamflow characteristics since the last permit was developed?		x	
6. Does the permit allow the discharge of new or increased loadings of any pollutants?		x	
7. Does the fact sheet **or** permit provide a description of the receiving water body(s) to which the facility discharges, including information on low/critical flow conditions and designated/existing uses?	x		
8. Does the facility discharge to a 303(d) listed water?	x		
a. Has a TMDL been developed and approved by EPA for the impaired water?		x	
b. Does the record indicate that the TMDL development is on the State priority list and will most likely be developed within the life of the permit?		x	
c. Does the facility discharge a pollutant of concern identified in the TMDL or 303(d) listed water? *To be Delisted*		x	
9. Have any limits been removed, or are any limits less stringent, than those in the current permit?		x	

10. Does the permit authorize discharges of storm water?	x		
I.B. Permit/Facility Characteristics – cont.	**Yes**	**No**	**N/A**
11. Has the facility substantially enlarged or altered its operation or substantially increased its flow or production?		x	
12. Are there any production-based, technology-based effluent limits in the permit?	x		
13. Do any water quality-based effluent limit calculations differ from the State's standard policies or procedures?		x	
14. Are any WQBELs based on an interpretation of narrative criteria?			x
15. Does the permit incorporate any variances or other exceptions to the State's standards or regulations?	x		
16. Does the permit contain a compliance schedule for any limit or condition?	x		
17. Is there a potential impact to endangered/threatened species or their habitat by the facility's discharge(s)?		x	
18. Have impacts from the discharge(s) at downstream potable water supplies been evaluated?	x		
19. Is there any indication that there is significant public interest in the permit action proposed for this facility?	x		
20. Have previous permit, application, and fact sheet been examined?	x		

Part II. NPDES Draft Permit Checklist

Region III NPDES Permit Quality Review Checklist – For Non-Municipals

(To be completed and included in the record for <u>all</u> non-POTWs)

II.A. Permit Cover Page/Administration	**Yes**	**No**	**N/A**
1. Does the fact sheet **or** permit describe the physical location of the facility, including latitude and longitude (not necessarily on permit cover page)?	x		
2. Does the permit contain specific authorization-to-discharge information (from where to where, by whom)?	x		

II.B. Effluent Limits – General Elements	**Yes**	**No**	**N/A**
1. Does the fact sheet describe the basis of final limits in the permit (e.g., that a comparison of technology and water quality-based limits was performed, and the most stringent limit selected)?	x		
2. Does the fact sheet discuss whether "antibacksliding" provisions were met for any limits that are less stringent than those in the previous NPDES permit?			x

II.C. Technology-Based Effluent Limits (Effluent Guidelines & BPJ)	**Yes**	**No**	**N/A**
1. Is the facility subject to a national effluent limitations guideline (ELG)?	x		
a. If yes, does the record adequately document the categorization process, including an evaluation of whether the facility is a new source or an existing source?	x		
b. If no, does the record indicate that a technology-based analysis based on Best Professional Judgement (BPJ) was used for all pollutants of concern discharged at treatable concentrations?			x
2. For all limits developed based on BPJ, does the record indicate that the limits are consistent with the criteria established at 40 CFR 125.3(d)?			x
3. Does the fact sheet adequately document the calculations used to develop both ELG and /or BPJ technology-based effluent limits?	x		
4. For all limits that are based on production or flow, does the record indicate that the calculations are based on a "reasonable measure of ACTUAL production" for the facility (not design)?			x
5. Does the permit contain "tiered" limits that reflect projected increases in production or flow?		x	
a. If yes, does the permit require the facility to notify the permitting authority when alternate levels of production or flow are attained?			x
6. Are technology-based permit limits expressed in appropriate units of measure (e.g., concentration, mass, SU)?	x		
7. Are all technology-based limits expressed in terms of both maximum daily, weekly average, and/or monthly average limits?	x		
8. Are any final limits less stringent than required by applicable effluent limitations guidelines or BPJ?		x	

II.D. Water Quality-Based Effluent Limits	**Yes**	**No**	**N/A**
1. Does the permit include appropriate limitations consistent with 40 CFR 122.44(d) covering State narrative and numeric criteria for water quality?	x		
2. Does the record indicate that any WQBELs were derived from a completed and EPA approved TMDL?			x
3. Does the fact sheet provide effluent characteristics for each outfall?	x		
4. Does the fact sheet document that a "reasonable potential" evaluation was performed?	x		
a. If yes, does the fact sheet indicate that the "reasonable potential" evaluation was performed in accordance with the State's approved procedures?	x		

b. Does the fact sheet describe the basis for allowing or disallowing in-stream dilution or a mixing zone?	x		
II.D. Water Quality-Based Effluent Limits – cont.	**Yes**	**No**	**N/A**
c. Does the fact sheet present WLA calculation procedures for all pollutants that were found to have "reasonable potential"?	x		
d. Does the fact sheet indicate that the "reasonable potential" and WLA calculations accounted for contributions from upstream sources (i.e., do calculations include ambient/background concentrations where data are available)?	x		
e. Does the permit contain numeric effluent limits for all pollutants for which "reasonable potential" was determined?			x
5. Are all final WQBELs in the permit consistent with the justification and/or documentation provided in the fact sheet?	x		
6. For all final WQBELs, are BOTH long-term (e.g., average monthly) AND short-term (e.g., maximum daily, weekly average, instantaneous) effluent limits established?	x		
7. Are WQBELs expressed in the permit using appropriate units of measure (e.g., mass, concentration)?	x		
8. Does the fact sheet indicate that an "antidegradation" review was performed in accordance with the State's approved antidegradation policy?	x		

II.E. Monitoring and Reporting Requirements	**Yes**	**No**	**N/A**
1. Does the permit require at least annual monitoring for all limited parameters?	x		
a. If no, does the fact sheet indicate that the facility applied for and was granted a monitoring waiver, AND, does the permit specifically incorporate this waiver?			
2. Does the permit identify the physical location where monitoring is to be performed for each outfall?	x		
3. Does the permit require testing for Whole Effluent Toxicity in accordance with the State's standard practices?	x		

II.F. Special Conditions	**Yes**	**No**	**N/A**
1. Does the permit require development and implementation of a Best Management Practices (BMP) plan or site-specific BMPs?	x		
a. If yes, does the permit adequately incorporate and require compliance with the BMPs?	x		
2. If the permit contains compliance schedule(s), are they consistent with statutory and regulatory deadlines and requirements?	x		
3. Are other special conditions (e.g., ambient sampling, mixing studies, TIE/TRE, BMPs, special studies) consistent with CWA and NPDES regulations?	x		

II.G. Standard Conditions	**Yes**	**No**	**N/A**
1. Does the **permit** contain all 40 CFR 122.41 standard conditions or the State equivalent (or more stringent) conditions?	x		

List of Standard Conditions – 40 CFR 122.41

Duty to comply	Property rights	Reporting Requirements
Duty to reapply	Duty to provide information	Planned change
Need to halt or reduce activity not a defense	Inspections and entry	Anticipated noncompliance
	Monitoring and records	Transfers
Duty to mitigate	Signatory requirement	Monitoring reports
Proper O & M	Bypass	Compliance schedules
Permit actions	Upset	24-Hour reporting
		Other non-compliance

2. Does the permit contain the additional standard condition (or the State equivalent or more stringent conditions) for existing non-municipal dischargers regarding pollutant notification	x		

levels [40 CFR 122.42(a)]?			

Part III. Signature Page

Based on a review of the data and other information submitted by the permit applicant, and the draft permit and other administrative records generated by the Department/Division and/or made available to the Department/Division, the information provided on this checklist is accurate and complete, to the best of my knowledge.

Name	Christine Joyce
Title	Environmental Specialist II
Signature	CJ
Date	December 22, 2005